219

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L. F. ELECTRONICS
3924
RENWE

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 203

Ch. 19G1, 19N1

Two new chassis and several new models have been added which are electrically identical to Ch. 19E1, covered in Photofact Folder 2, Set 203, except for picture tube. The new chassis are 19G1 and 19N1. Ch. 19G1 uses a 21WP4 or 21WP4X picture tube. Ch. 19N1 uses a 21ZP4 picture tube. A list of the new model numbers, with the chassis used in each, is given below:

MODEL No.	CHASSIS USED
321DX15, 321DX16, 321DX17	19E1
321DX15A, 321DX16A, 321DX17A	19E1 or 19G1
321DX15L, 321DX16L, 321DX17L	19N1
321DX25B	19E1 or 19G1
321DX26	19E1
321DX26B, 321DX27B	19E1 or 19G1

Ch. 19E1, 19G1, 19N1

The following corrections should be made in the schematic for Ch. 19E1.

R34 should be 820KΩ.

R86 should be 820KΩ.

R92 should be 1.2KΩ.

The connections to terminals 2 and 3 of the sync couplate (R67 - C51) are reversed. Terminal 2 should go to C52 and terminal 3 to the junction of C55, R65 and R66.

Runs 1 and 2

Production Changes through Run 2 are covered in Photofact Folder 2, Set 203. Later production changes are given in this bulletin. Whenever applicable, these changes may be made in the field on sets which have not been modified in production.

Run 3

TO ADD AGC TO THE SECOND VIDEO IF AMPLIFIER

The screen of the second Video IF Amplifier, V4, and the bottom of the primary of L12 were connected through a 1000Ω and a 4500Ω resistor to the 265 volt source (M6).

A .001MFD capacitor was added from the bottom of L12 to ground.

The control grid of V4 is returned to AGC through L11 and a 1000Ω decoupling resistor.

A .001MFD capacitor was added from the bottom of the secondary of L11 to ground.

The suppressor grid of V4 was connected directly to ground.

The cathode of V4 returns to ground through a 68Ω resistor.

A partial schematic, showing the new circuit is given on the next page.

ADMIRAL CHASSIS 19E1, 19G1, 19N1

(Continued on the Reverse Side)

PRODUCTION CHANGES
BULLETIN 78

PRODUCTION CHANGES
BULLETIN 78

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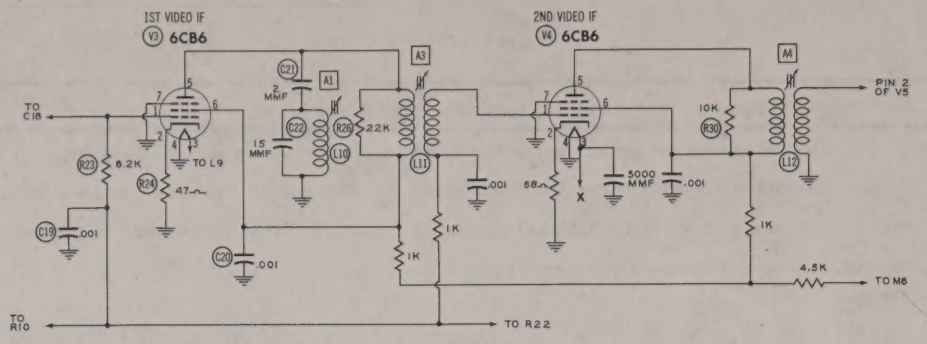
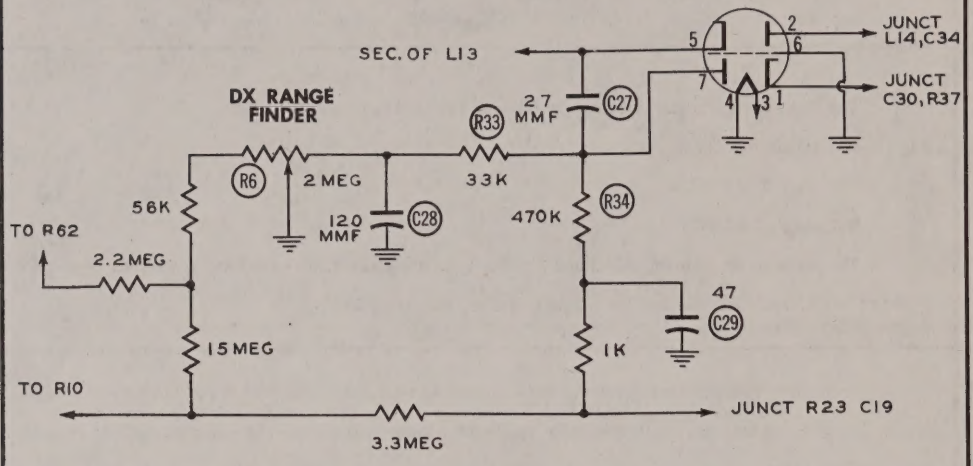
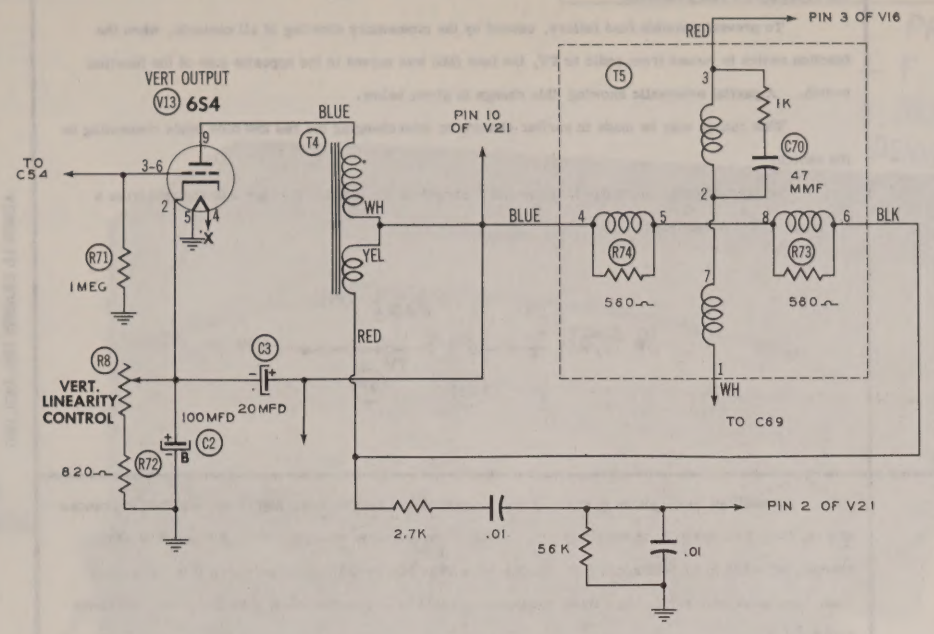


Run 3	TO REDUCE SNOW The AGC voltage applied to the tuner has been reduced in respect to the AGC voltage applied to the 1st. and 2nd. Video IF Amplifier. A voltage divider network was added between B+, the AGC rectifier, V6, and the DX Range Finder Control. R34 was reduced from 820KΩ to 470KΩ and R21 was omitted. A partial schematic of the revised circuit is given below.



Run 4	TO IMPROVE HORIZONTAL SYNC STABILITY A 8.2KΩ, ½ W. resistor was added in series with the lead between R67A, in the sync couplate, and pin 1 of V12.
Run 5	VERTICAL RETRACE BLANKING CIRCUIT ADDED To apply vertical retrace blanking the following changes were made: The red lead from pin 10 of the picture tube and the wire from the junction of R91 and R92 were disconnected from the junction of the black lead of T5 and the red lead of T4. These leads are then connected to the junction of the white and yellow leads of T4. The red (positive) lead of C3 is disconnected from the black lead of T4 and reconnected to the junction of the white and yellow leads of T4. The green lead from pin 2 (grid) of the picture tube is disconnected from ground and connected to a .01MFD capacitor. The other end of this capacitor was connected to a 2700Ω resistor. This resistor is connected to the junction of the black lead from T5 and the red lead of T4. A 56KΩ resistor is added from the junction of the .01MFD capacitor and the green lead to ground. A .01MFD capacitor is added across the 56KΩ resistor. A partial schematic of the circuit is given on the next page.

(Continued on the Next Page)



Run 6

NEW TUNER

All chassis stamped Run 6 and higher have a new tuner (part #94D46-3). This tuner is identical to the one originally used (part #94D46-2), except for longer shaft length. This longer shaft length is used to make the chassis adaptable for future installation of a UHF tuner.

CHANGE IN DIAL LIGHT

In chassis stamped Run 6 and higher the dial light was changed from a Type 44 to a Type 47. When the #47 dial light is used the voltage dropping resistor (R96)is changed to 10Ω.

Run 7

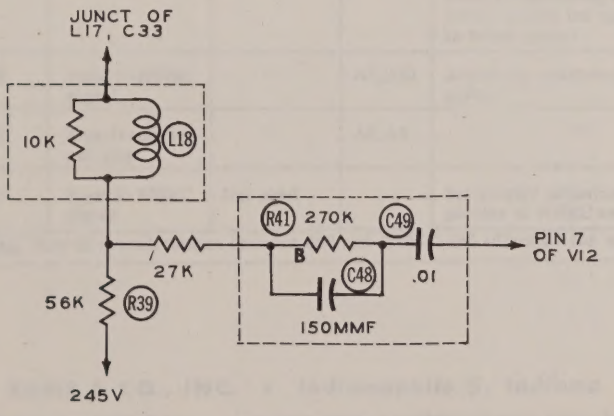
TO IMPROVE HORIZONTAL SYNC STABILITY

The integrator couplate (R67-C51) was changed to part #63B6-11. This couplate is identical to part #63B6-2, except the 22KΩ resistor is not included in the unit, but a separate 22KΩ resistor is connected from terminal 3 of the couplate to pin 1 of V12. Terminal 2 of the couplate goes to C52 and terminal 1 is grounded. In sets using this couplate the 8.2KΩ resistor added in Run 4 is not used.

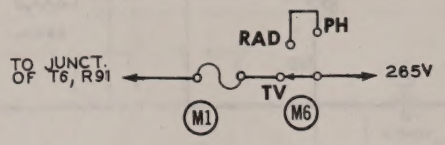
TO SIMPLIFY CIRCUIT

The sync couplate (C48-R41) was changed to part #63B6-8. This couplate contains R41B, C48 and C49. When couplate 63B6-8 is used, R41A is omitted, R40 is changed to 27KΩ, R39 is changed to 5.6KΩ and R38 is omitted.

A partial schematic of this circuit is given below:



(Continued on the Reverse Side)

Run 8	**TO PREVENT FUSE FAILURE** To prevent possible fuse failure, caused by the momentary shorting of all contacts, when the function switch is turned from radio to TV, the fuse (M1) was moved to the opposite side of the function switch. A partial schematic showing this change is given below. This change may be made in earlier chassis by interchanging the red and blue leads connecting to the switch. To prevent fuse failure due to momentary surges in line voltage the fuse was changed from a 1/4 Amp. to 3/8 Amp. fuse. 
	In addition to the above in some Run 2 chassis and in all Run 3 and higher chassis the tolerances of R79, R80, R83 and R62, in the horizontal oscillator circuit were changed. R79, R80 and R83 were changed from 10% to 5% tolerance. C62 was changed from 20% to 10%. In cases where it is difficult to make horizontal sync adjustments these components should be checked to see if they are in the tolerances above.

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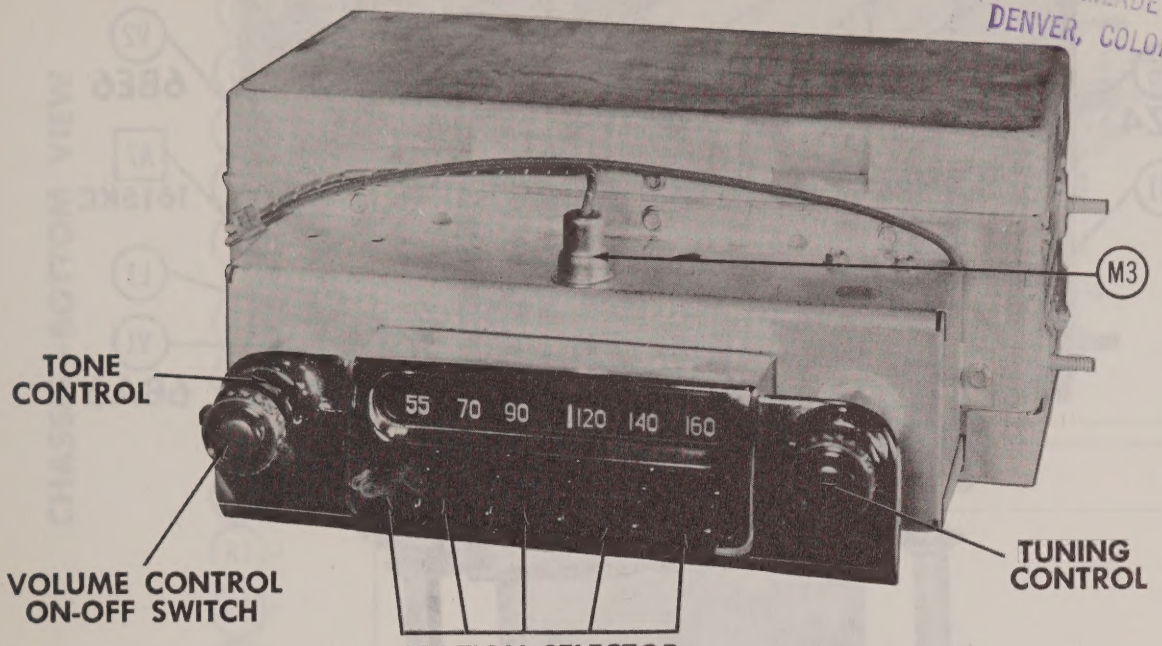

CHEVROLET
MODEL 986668

TRADE NAME	Chevrolet Model 986668 (For 1953 Chevrolet Automobiles)
SUPPLIER	Chevrolet Motors., Div. of General Motors Corp., Detroit, Mich.
TYPE SET	Battery Operated Custom Built Superheterodyne Automobile Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6V6GT Audio Output, 0Z4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.8 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	262KC	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output in order given.
2.	100MMF	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A5, A6, A7	If necessary, preset oscillator core (A8) so that end of core is 1 25/32" from the mounting end of the coil form. Adjust for maximum output in order given.
3.	"	"	1000KC	Tune to 1000KC signal	"	A9, A10	Adjust for maximum output in order given.
4.	"	"	1615KC	High frequency end stop	"	A6, A7	"
5.	"	"	900KC	Tune to 900KC signal	Not used		Set pointer adjustment screw to place pointer at 900KC on the dial.

With radio installed in car and operating, tune to a weak station between 600 and 1000KC and adjust A7 for maximum volume.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CHEVROLET PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF Amp	6AV6	6AV6	7BT	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Rectifier	0Z4	0Z4	4R	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CHEVROLET PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	400	M-908	AFH3-120		CO99		FP345.8	TVL-3678	
B	▲20	400								
C	20	25								
C2	.05	200	6512	P288-05	DF-503	PJ285		PT415	2TM-S42	
C3	.05	400	6512	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C4	10	500	G-100	1469-00001		5R5Q1		MCB215	MS-41	
C5	39	500	G-390	SI39	D6-390		GP1K-390	UC-5439	5GA-Q39	
C6	180		7257424							
C7	.0015	200	1218499	P688-0015	D6-152	PTE6D15	GP2L-152		6TM-D15	
C8	.002	600	6528	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C9	330	500	G-331	1469-00035	D6-331		GP2K-331	UC-5333	5GA-T33	
C10	.05	400	6512	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C11	100		G-101	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C12	.008	600	H-802	P688-008						
C13	.006	1600	H-602	P1688-006	DD16-602	PTE16D6		PT1626	MB-D6	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CHEVROLET PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	Switch		7262825					Tone Switch
B	1Meg	½						Volume & Switch
R2	500Ω	1	7262838					Sensitivity-wire wound

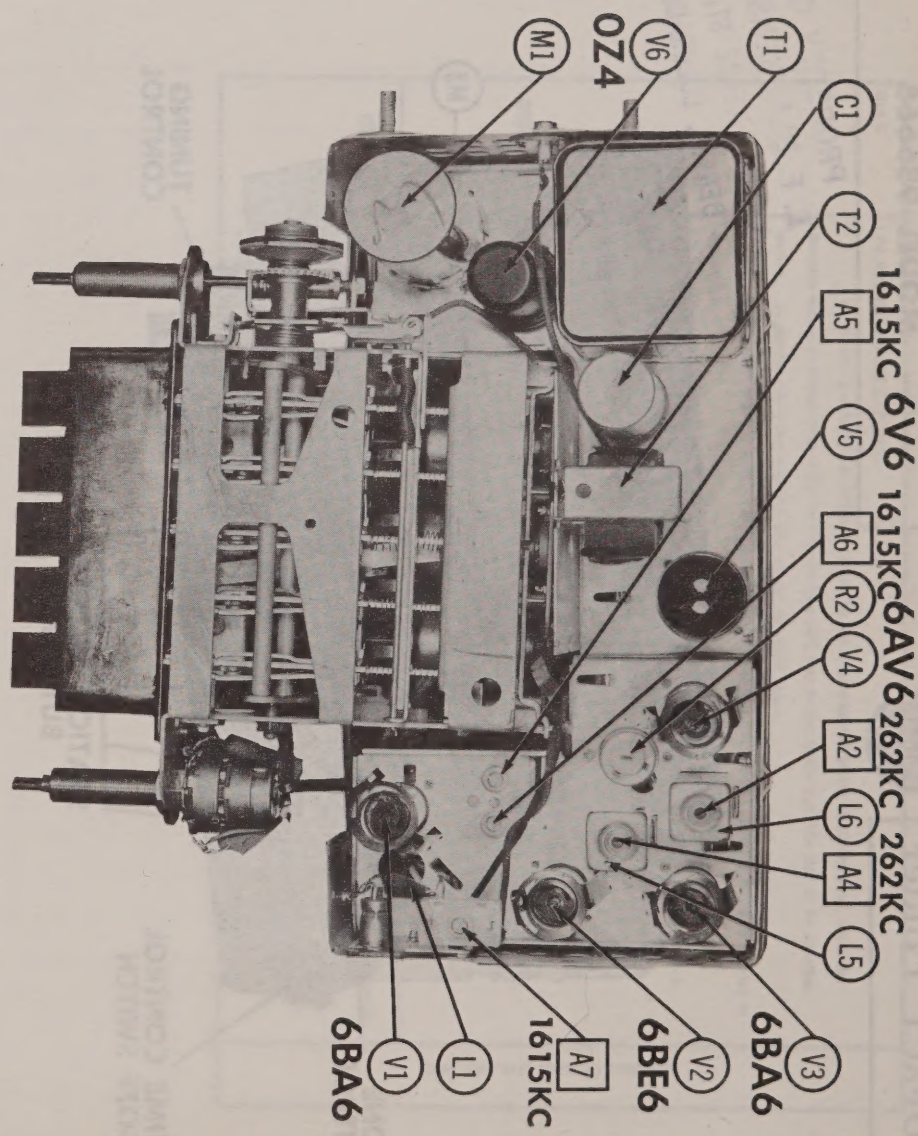
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CHEVROLET PART No.	IRC PART No.	
R3	68Ω	½	1215558	BTS-68	
R4	2.2Meg	½	A-225	BTS-2.2Meg	
R5	15KΩ	1	B-153	BTA-15K	
R6	15KΩ	2	C-153	BTB-15K	
R7	330KΩ	½	A-334	BTS-330K	
R8	22KΩ	½	A-223	BTS-22K	
R9	1Meg	½	A-105	BTS-1Meg	
R10	47KΩ	½	A-473	BTS-47K	
R11	330KΩ	½	A-334	BTS-330K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CHEVROLET PART No.	IRC PART No.	
R12	220KΩ	½	A-224	BTS-220K	
R13	220KΩ	½	A-224	BTS-220K	
R14	100KΩ	½	A-104	BTS-100K	
R15	330Ω	1	B-331	BTA-330	
R16	82KΩ	1	1216129	BTA-82K	
R17	3900Ω	½	A-392	BTS-3900	
R18	390Ω	½	A-391	BTS-390	
R19	220Ω	1	B-221	BTA-220	
R20	1800Ω	2			Note

Note: Replace only with 2700Ω (2 watt) & 5600Ω (1 watt) in parallel.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	6.3VAC @2.9A	400VCT .042A			7262956		P-4071		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CHEVROLET PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	5.1KΩ	4.3Ω	366Ω	.36Ω	7260712	A-3877 ①	A-2930 ①	RO-9 ①	S-3X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CHEVROLET PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"x9"	PM	4.3Ω	7262198	ST-810 Mod. P69-V	69A3	

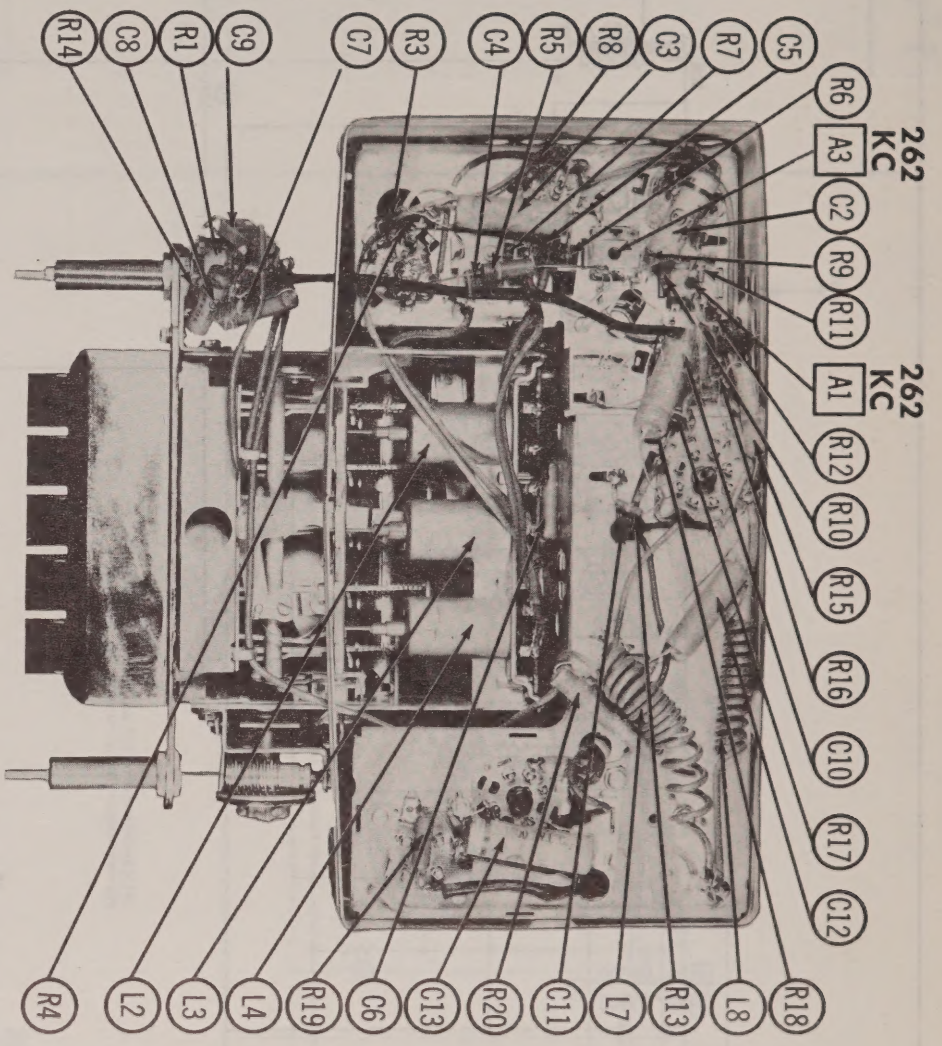
COILS (RF-IF)

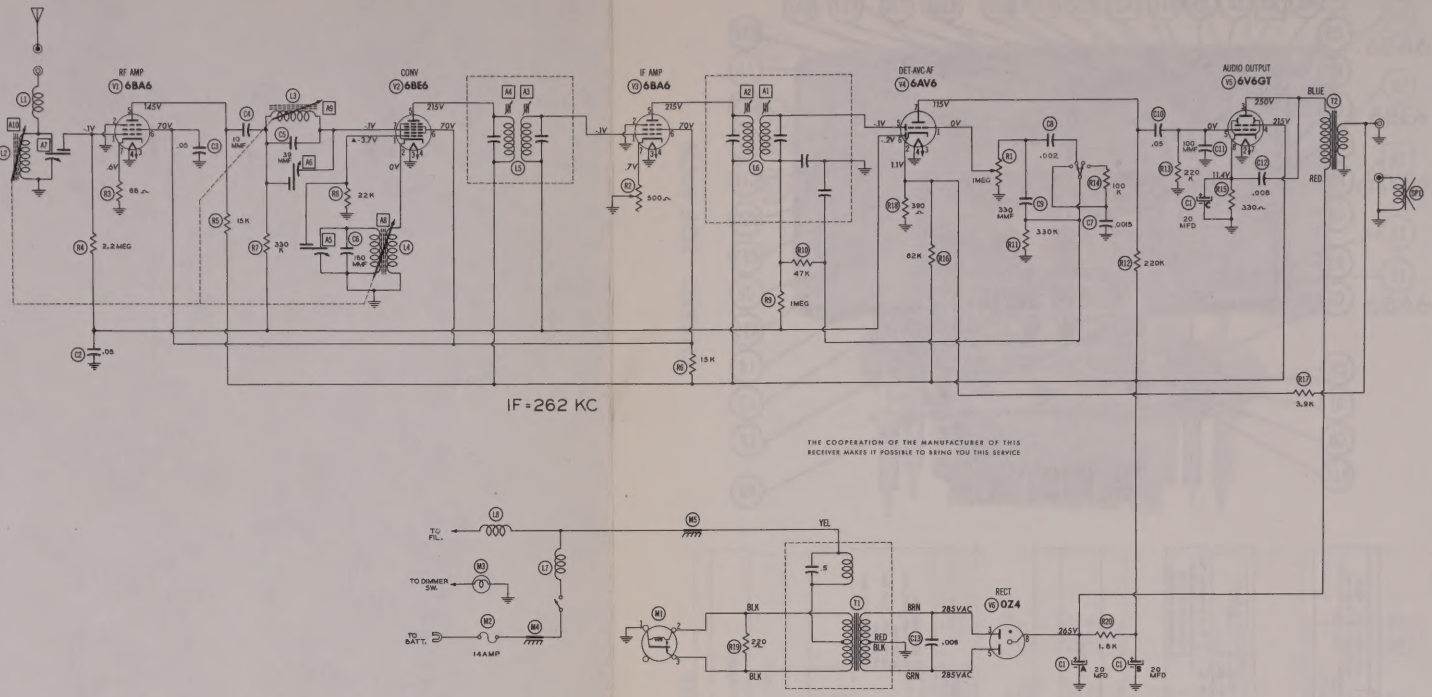
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CHEVROLET PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Loading Coil	.6Ω		7255738			4612	9 Microhenries
L2	Ant. Coil	9Ω		7258914				Less core, core part #7258468
L3	RF Coil	9Ω		7258914				Less core, core part #7258468
L4	Osc. Coil	1Ω	4Ω	7258911				Less core, core part #7258468
L5	Input IF	29Ω	29Ω	1218725	16-6752	BC-350	12-H1	
L6	Output IF	29Ω	29Ω	1218726	16-6754	BC-354	12-H6	
L7	Fil. Choke	0Ω		1217846				
L8	Fil. Choke	0Ω		7262868				

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				CHEVROLET PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115Ω	7239124	5300	859	5300	

CHASSIS—BOTTOM VIEW





1 - DC voltage measurements are at 20,000 ohms per volt, AC Voltage measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.5Meg	0Ω	.6Ω	0Ω	†17KΩ	†17KΩ	68Ω	
V 2	6BE6	22KΩ	1Ω	0Ω	.6Ω	†1.8KΩ	†17KΩ	1.7Meg	
V 3	6BA6	1.3Meg	0Ω	0Ω	.6Ω	†1.8KΩ	†17KΩ	75Ω	
V 4	6AV6	25Ω	355Ω	.6Ω	0Ω	380KΩ	1.4Meg	†220KΩ	
V 5	6V6GT	INF	0Ω	†365Ω	†1.8KΩ	220KΩ	.36Ω	.6Ω	330Ω
V 6	0Z4	0Ω	INF	360Ω	INF	395Ω	INF	INF	82KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V6

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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3... E...
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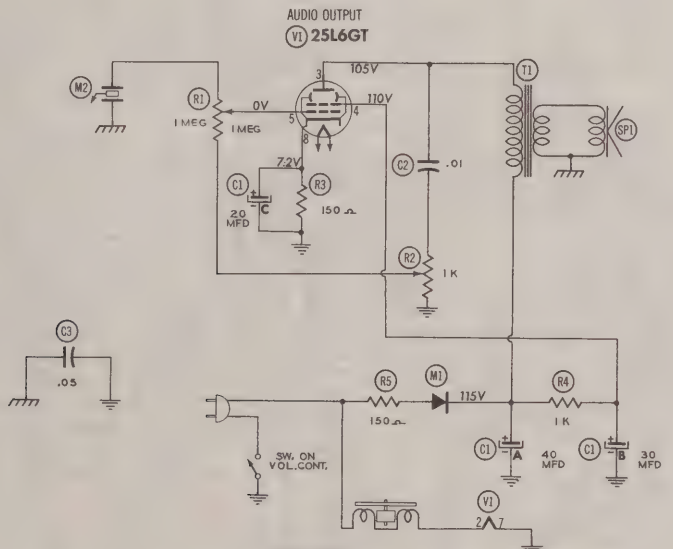
TRADE NAME	Columbia Model 202
MANUFACTURER	Columbia Records, Inc., 1473 Barnum Ave., Bridgeport 8, Conn.
TYPE SET	AC Operated Phono Amplifier with 3 Speed Manual Record Player
TUBES (one)	Type 25L6GT AF Amplifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .34 Amp. @ 117 Volts AC



RESISTANCE READINGS

Base	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	25L6GT	INF	12Ω	†154Ω	†1KΩ	†1KΩ	INF	0Ω	150Ω

ALL MEASUREMENTS TAKEN WITH TONE CONTROL IN "MAXIMUM" (CCW) POSITION
† MEASURED FROM OUTPUT OF M1

COLUMBIA
MODEL 202

COLUMBIA
MODEL 202

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: COLUMBIA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	Audio Output	25L6GT	25L6GT	7S	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: COLUMBIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150		AFH3-09		C008		FP311.4	R1038	
B	▲30	150								
C	20	150								
C2	.01	600		P688-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C3	.05	400		P488-05		PTE4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: COLUMBIA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	BA012-289	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	1000Ω	½	BA011-1011	Q11-108	AG-8-S	AB-5	U-4	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-1	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: COLUMBIA PART No.	IRC PART No.	NOTES
R3	150Ω	1		BTA-150	
R4	1000Ω	½		BTS-1000	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: COLUMBIA PART No.	IRC PART No.	NOTES
R5	150Ω	1			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: COLUMBIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T1	2.5KΩ	3.3Ω	154Ω	.46Ω		A-3332	A-3025	RO-2 ①	S-1X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: COLUMBIA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.3Ω		ST-113 Mod. P4-X	4A1	

SELENIUM RECTIFIER

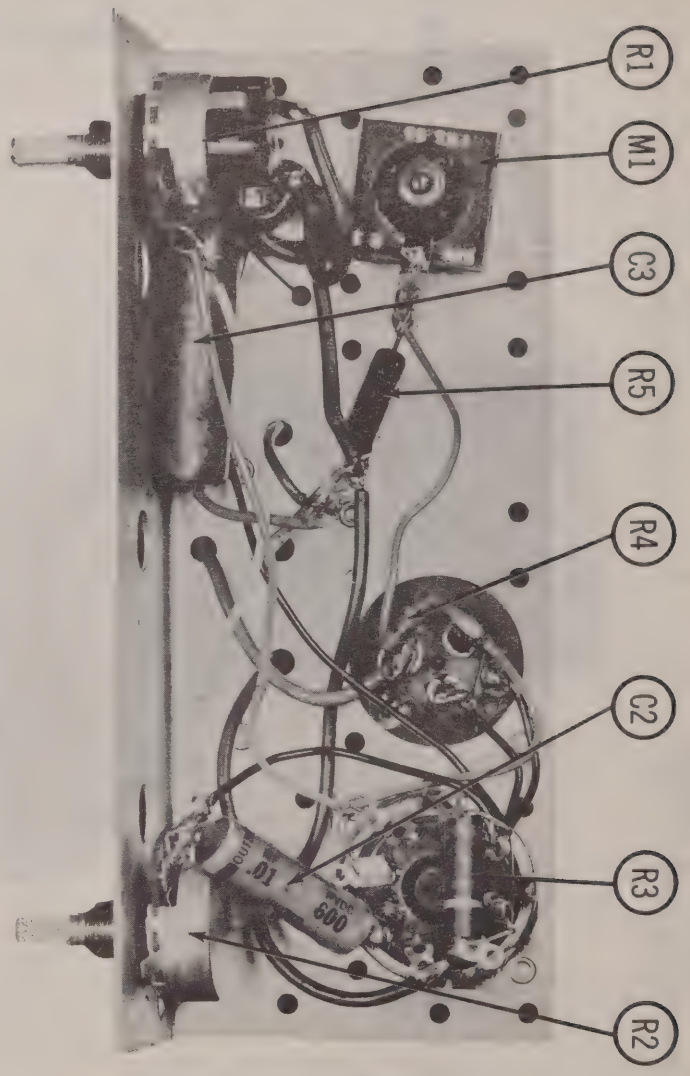
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: COLUMBIA PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.049ADC		NA5	8J1	1002A	6S65	65

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: COLUMBIA PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2		18L3 *P-18L3	M-202					* Complete arm and cartridge assembly

ASTATIC NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL NEEDLE REPLACEMENTS SEE BELOW.

CHASSIS—BOTTOM VIEW

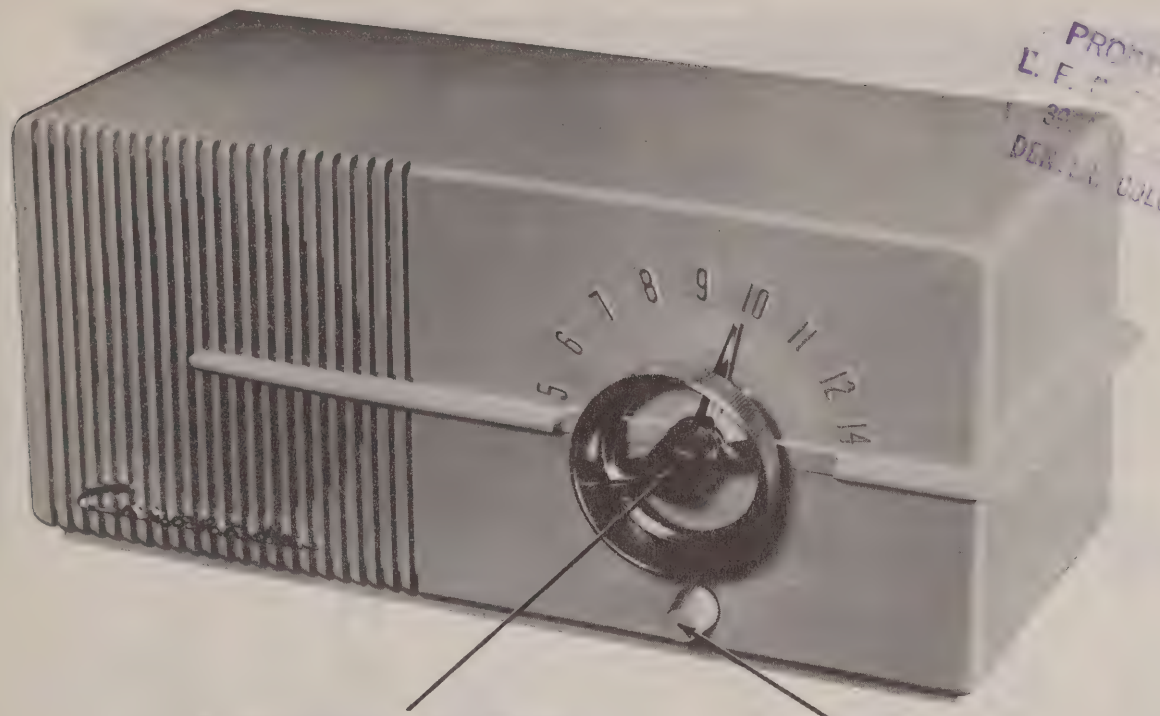


PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: COLUMBIA PART No.	WALCO PART No.	JENSEN PART No.	REMARKS
M3		WS-400-2	J-152	

CORONADO
MODEL 35RA33-43-8225



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CORONADO
MODEL 35RA33-43-8225

TRADE NAME	Coronado Model 35RA33-43-8225
SUPPLIER	Gamble-Skogmo Inc., 15 No. 8th. St., Minneapolis, Minn.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 (or) 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

CORONADO
MODEL 35RA33-43-8225

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		CORONADO PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
B	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	C30-50-1.5E	PRS150/50-30		EDL5315		2N520	TVA-2450	Red
B	30	150								Blue
C2	.05	400	C052	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C3A	100		†	SI100	†PC50	TM5T1	†1403-1	UC-531	†100C1	
B	100			SI100		TM5T1		UC-531		
C4	100		C0015CD	BPD-0001	D6-101	TM5T1	GP2K-101	UC-531	5GA-T1	
C5A	5000									
B	250		♦		♦PC70		♦1406-01		♦104C4	
C										
C6	.05	400	C054	489ZX-05		PTE4S5		PT415	4TM-S5	
C7	.1	400	C104MP	P488-1		PTE4P1		PT401	4TM-P1	

† Items C3A, C3B, R5 are combined in one unit.
♦ Items C5A, C5B, C5C, R7A, R7B are combined in one unit, When replacing separately items C5B and C5C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	VRT 67H	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

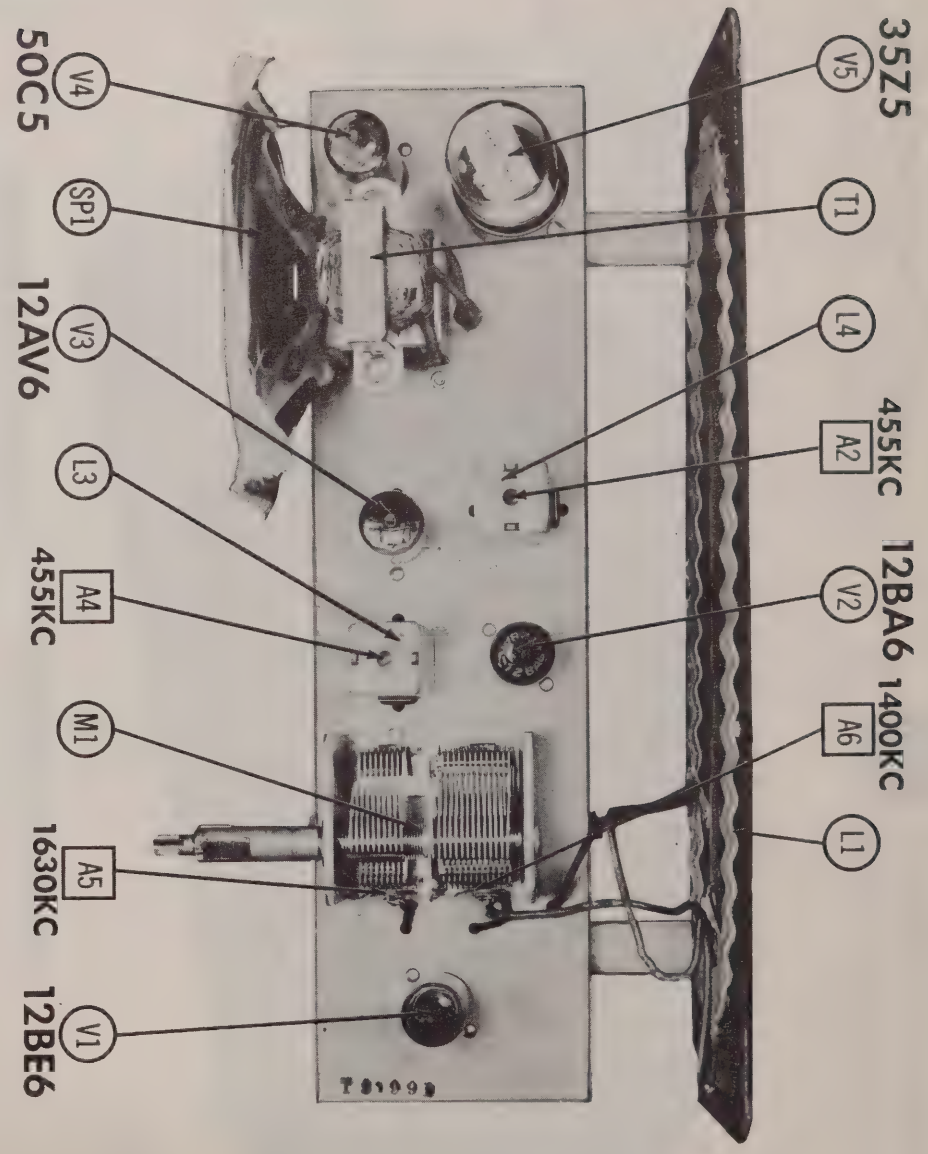
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R2	22KΩ	½	R223.5	BTS-22K	
R3	390Ω	½	R391.5	BTS-390	
R4	1Meg	½	R16.5	BTS-1Meg	
R5	47KΩ	½	†	BTS-47K	
R6	10Meg	½	R107.5	BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CORONADO PART No.	IRC PART No.	
R7A	500KΩ	½	♦		
B	500KΩ	½			
R8	150Ω	½	R151.5	BTS-150	
R9	1000Ω	1	R1031	BTA-1000	
R10	22Ω	1			Note

Note: Not used in all Models.
♦ Items R7A, R7B, C5A, C5B, C5C are combined in one unit.
† Items R5, C3A, C3B are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		CORONADO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	3.4Ω	217Ω	.57Ω	T-73	A-3332	A-3025	RO-302 ①	S-1X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.4Ω	SPK-73	ST-113 Mod. P4-X	4A1	

COILS (RF-IF)

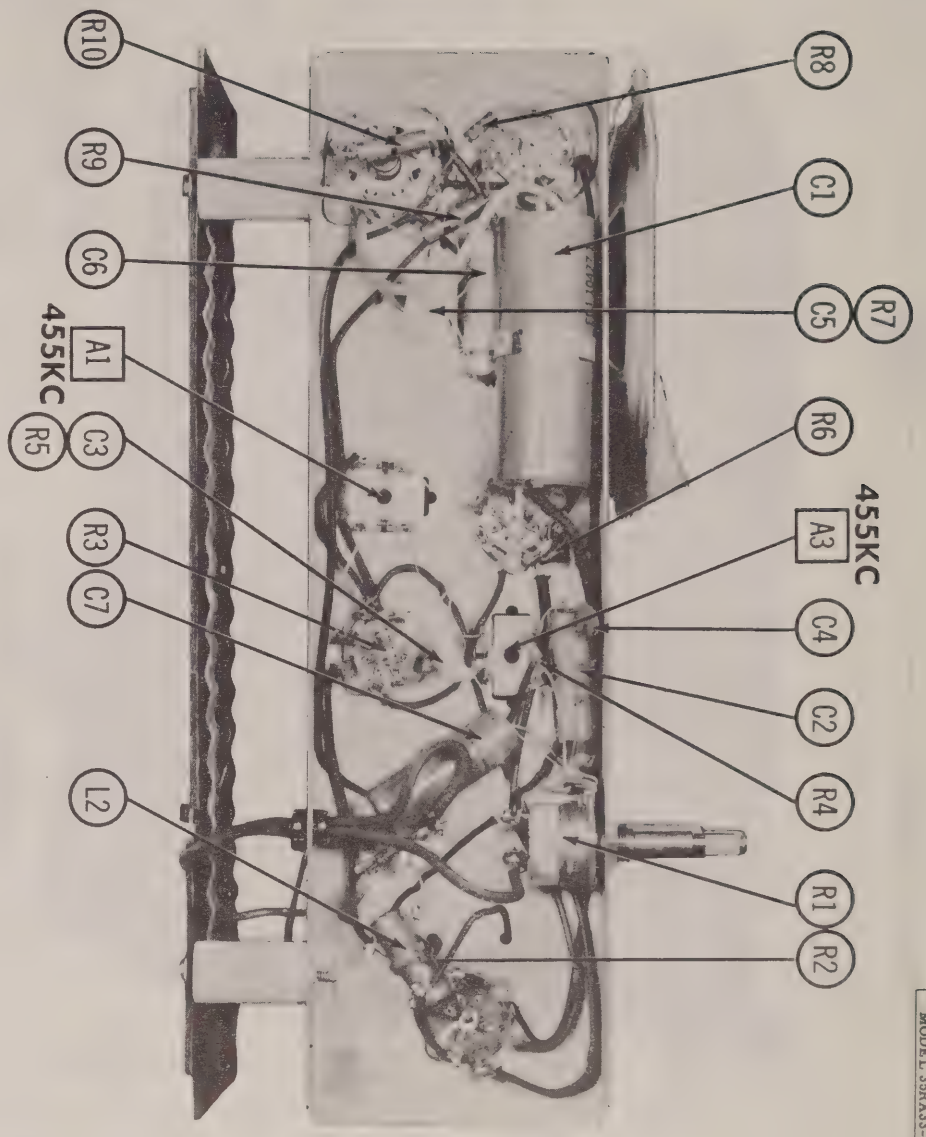
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CORONADO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2.1Ω		LAT-73				Includes cabinet back
L2	Osc. Coil	.6Ω	7.5Ω	L064	14-1073		69-Osc.*	
L3	Input IF	18Ω	18Ω	T114-7	16-6758	BC-352	12-C1	
L4	Output IF	18Ω	18Ω	T114-7	16-6758	BC-353	12-C2	

* Drill mounting hole.

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M1	Tuning Cap.	VCT73	32-452MMF, 28-200MMF
	Cabinet	P2301	Specify color
	Pointer	M2303	
	Knob	M2302	Tuning
	Knob	P1704G	Volume

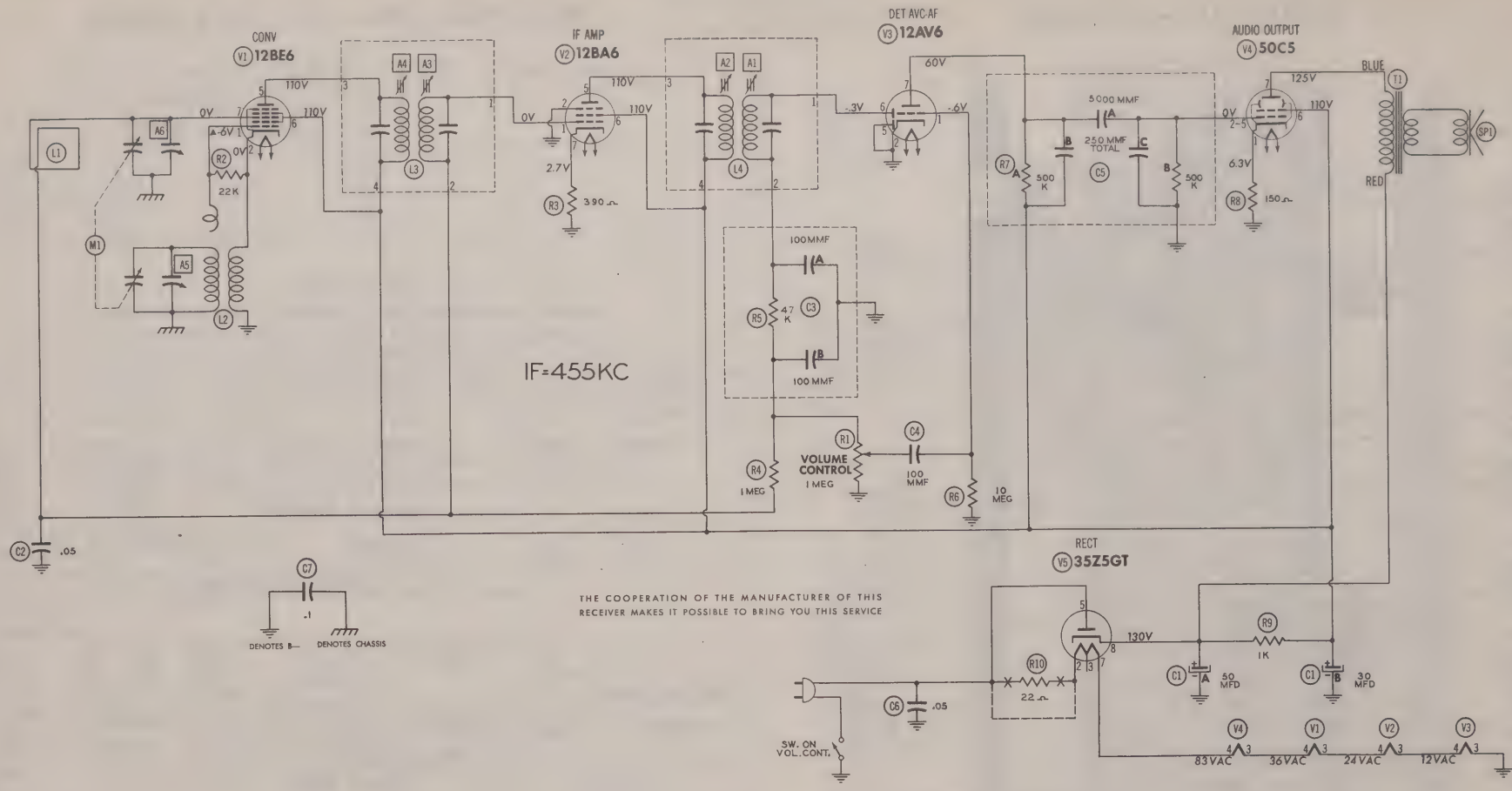
CHASSIS—BOTTOM VIEW



SET 219 FOLDER 4

CORONADO
MODEL 35RA33-43-8225

CORONADO
MODEL 35RA33-43-8225



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	22KΩ	.6Ω	24Ω	36Ω	†1KΩ	†1KΩ	2Meg	
V 2	12BA6	2Meg	0Ω	12 Ω	24Ω	†1KΩ	†1KΩ	390Ω	
V 3	12AV6	10Meg	0Ω	0Ω	12Ω	0Ω	1Meg	†500KΩ	
V 4	50C5	150Ω	500KΩ	36Ω	85Ω	500KΩ	†1KΩ	†217Ω	
V 5	35Z5GT	INF	120Ω	114Ω	INF	142Ω	0Ω	85Ω	500KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

FIRESTONE
MODEL 4-A-115

FIRESTONE
MODEL 4-A-115

TRADE NAME	Firestone Model 4-A-115
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron, Ohio
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 (or) 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	538-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.	"	High side to pin 1 (grid) of 12BA6 (V1). Low side to B-.	455KC	"	"	A6	Adjust for MINIMUM output.
4.		Loop	1400KC	Tune to 1400KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

To set dial pointer, turn tuning gang fully closed. Location of pointer should be approximately $\frac{1}{2}$" beyond "55" (on dial) in a clockwise direction.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		FIRESTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4A	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
B	Det.-AVC-AF Amp	12AV6	12AV6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BC	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	CV-54	AFH2-16		BO16		FP214	TVL-2435	
B	▲50	150								
C2	.047	400	C1473-4	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C3	200		CC201	S1200	D6-201	TM5T2	GP2K-201	UC-532	5GA-T2	
C4	100		CC101	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C5A	220									
B	.005									
C	250		♦PC-151		♦PC-151		♦1408-02		♦103C5	
D										
E	.005									
C6	.01	600	C103-6	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C7	.047	400	C1743-4	489ZX-047		PJ4S5		PT4147	4TM-S47	
C8	.1	400	C14L	P488-1		PJ4P1		PT401	4TM-P1	Note 1

♦ Items C5A, C5B, C5C, C5D, C5E, R7A, R7B, and R7C are combined in one unit.
When replacing items separately C5C and C5D should total 250MMF.
Note 1. When replacing item C8, coil should be rewound as on original unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	750KΩ	½	RV-100	Q13-137			U-51	Volume
B	Bushing		Not Req.	S-4			EB-158	Attach to R1A
C	Switch		Not Req.	76-1			US-26	Attach to R1A

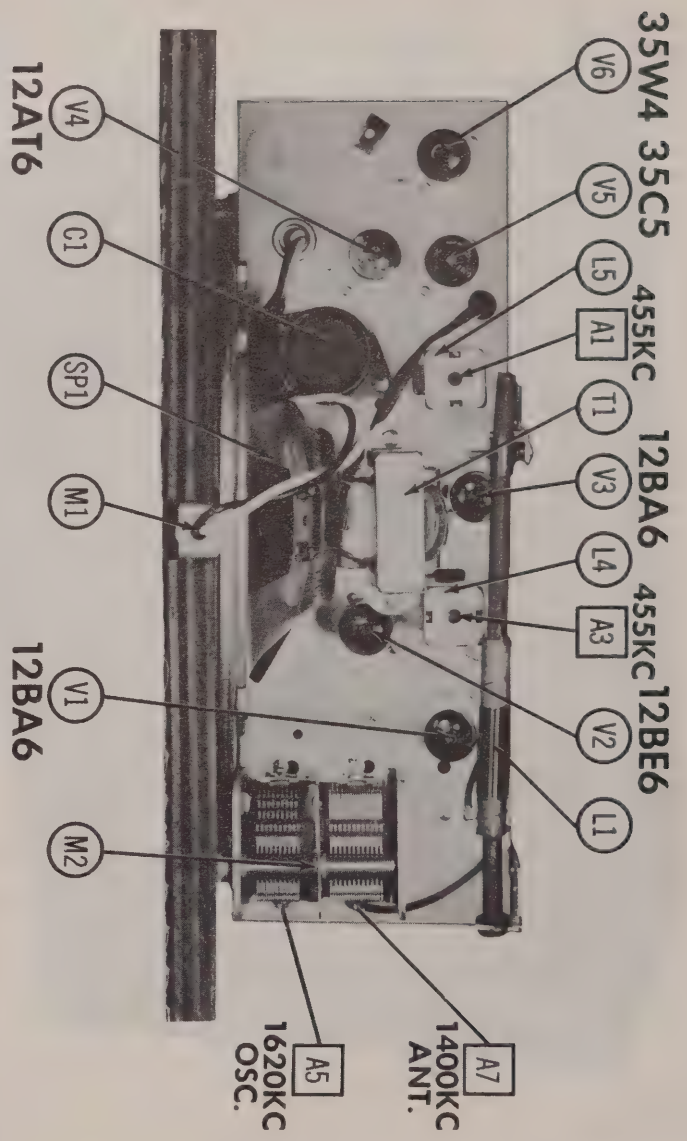
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FIRESTONE PART No.	IRC PART No.	
R2	3300Ω	½	R332	BTS-3300	
R3	470KΩ	½	R474	BTS-470K	
R4	22KΩ	½	R223	BTS-22K	
R5	100Ω	½	R101	BTS-100	Note
R6	2.2Meg	½	R225	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	FIRESTONE PART No.	IRC PART No.	
R7A	6.8Meg	½	♦PC-151	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R8	150Ω	½	R151	BTS-150	
R9	1200Ω	2	R122-2	BTB-1200	
R10	33Ω	½	R330		
R11	270KΩ	½	R274	BTS-270K	

Note: Some Models may use a 82Ω resistor in this application.
♦ Items R7A, R7B, R7C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	4.5KΩ	3.5Ω	366Ω	.68Ω	Part of Spkr.	A-3877	A-2930	RO-8	S-3X	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.5Ω	PM-327	ST-108 Mod. P6-X	6A1	

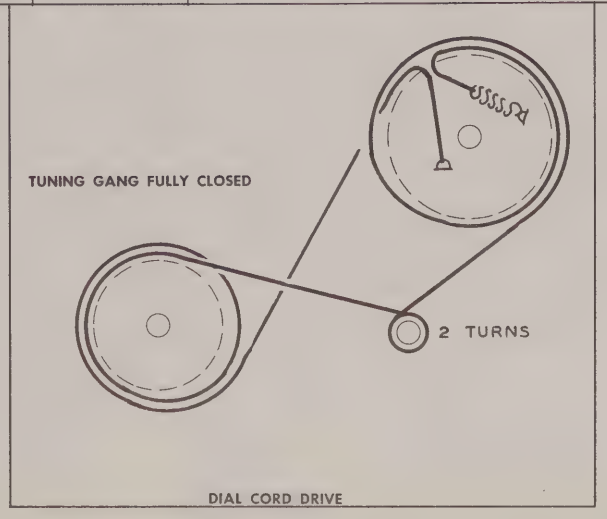
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	FIRESTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.3Ω		L-A26				3.4 Millihenries
L2	IF Trap	55Ω		L-326				
L3	Osc. Coil	.9Ω	9Ω	L-204			70-Osc.*	
L4	Input IF	19Ω	19Ω	1655-16	16-6758	BC-352	12-C1	
L5	Output IF	19Ω	19Ω	1655-16	16-6758	BC-353	12-C2	

* Disregard tap on secondary winding.

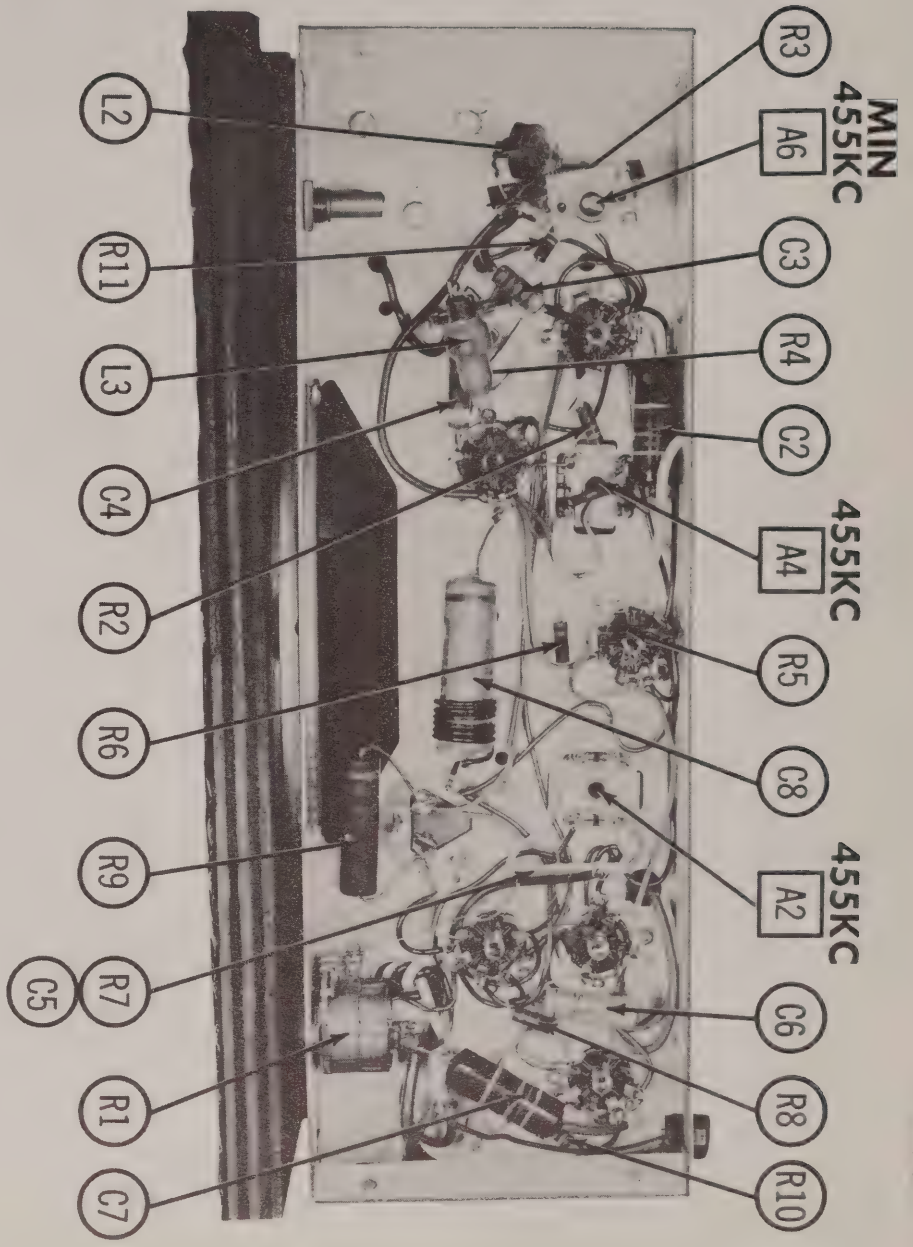
MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M1	Dial Light	T-47	Type #47
M2	Tuning Capacitor	CV-54	26-415MMF, 29-208MMF
A6	Trimmer Cap.	CT 3/30	3-30MMF (IF Trap)
	Cabinet	H324	
	Back Cabinet	H326	
	Dial Ring (Scale)	H55	
	Pointer	H56	
	Knob	H65	Off/On/Volume, Tuning (2 used)

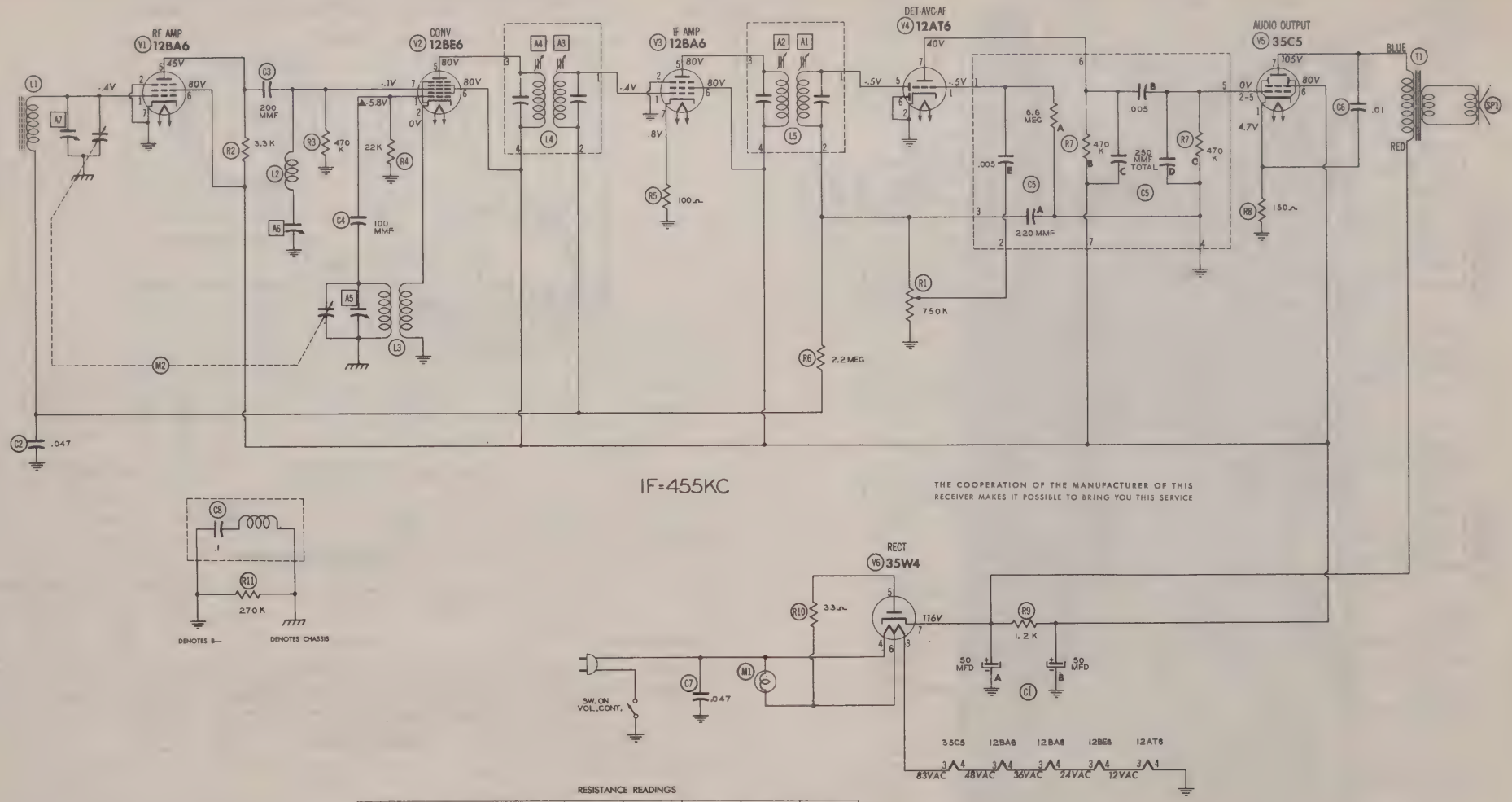


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



FIRESTONE MODEL 4-A-115



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	3Meg	0Ω	36Ω	24Ω	†4.5KΩ	†1.2KΩ	0Ω
V 2	12BE6	22KΩ	.9Ω	24Ω	12Ω	†1.2KΩ	†1.2KΩ	470KΩ
V 3	12BA6	3Meg	0Ω	48Ω	36Ω	†1.2KΩ	†1.2KΩ	100Ω
V 4	12AT6	6.8Meg	0Ω	12Ω	0Ω	750KΩ	0Ω	†470KΩ
V 5	35C5	150Ω	470KΩ	83Ω	48Ω	470KΩ	†1.2KΩ	†366Ω
V 6	35W4	INF	INF	83Ω	118Ω	145Ω	112Ω	300KΩ

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN #7 of V6.

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219-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

HOFFMAN
MODEL 27M709 (Ch. 197)

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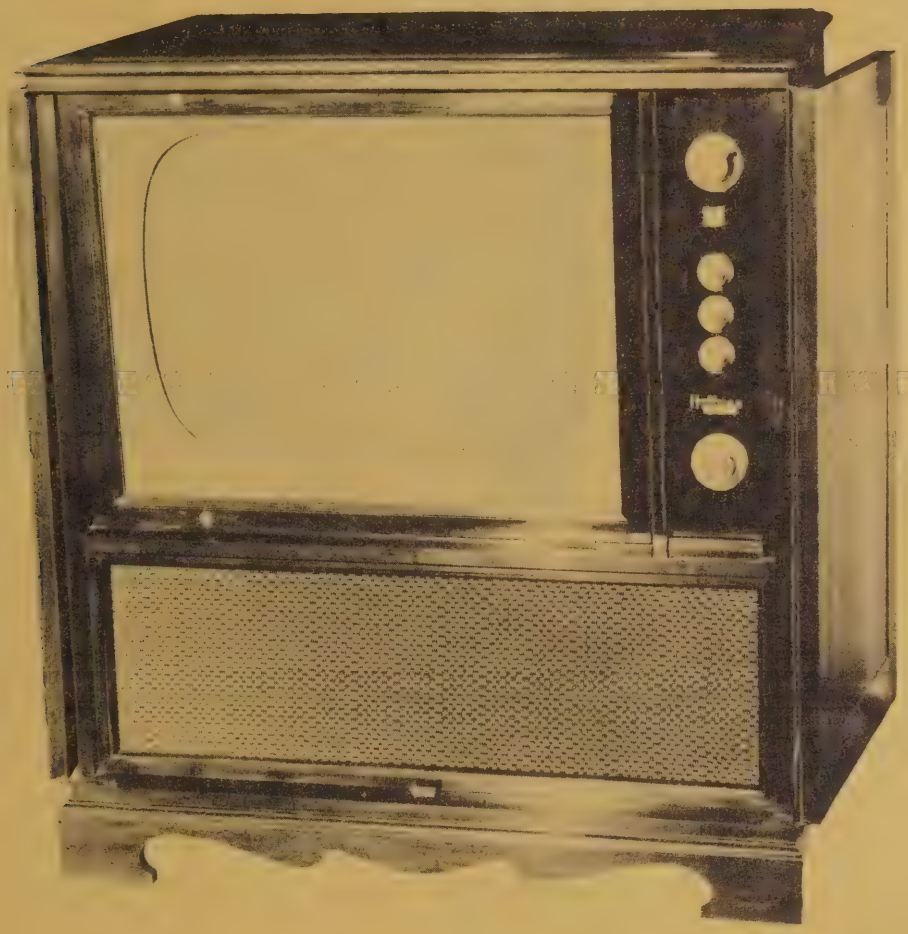

MODEL 27M709

HOFFMAN
MODEL 27M709 (Ch. 197)

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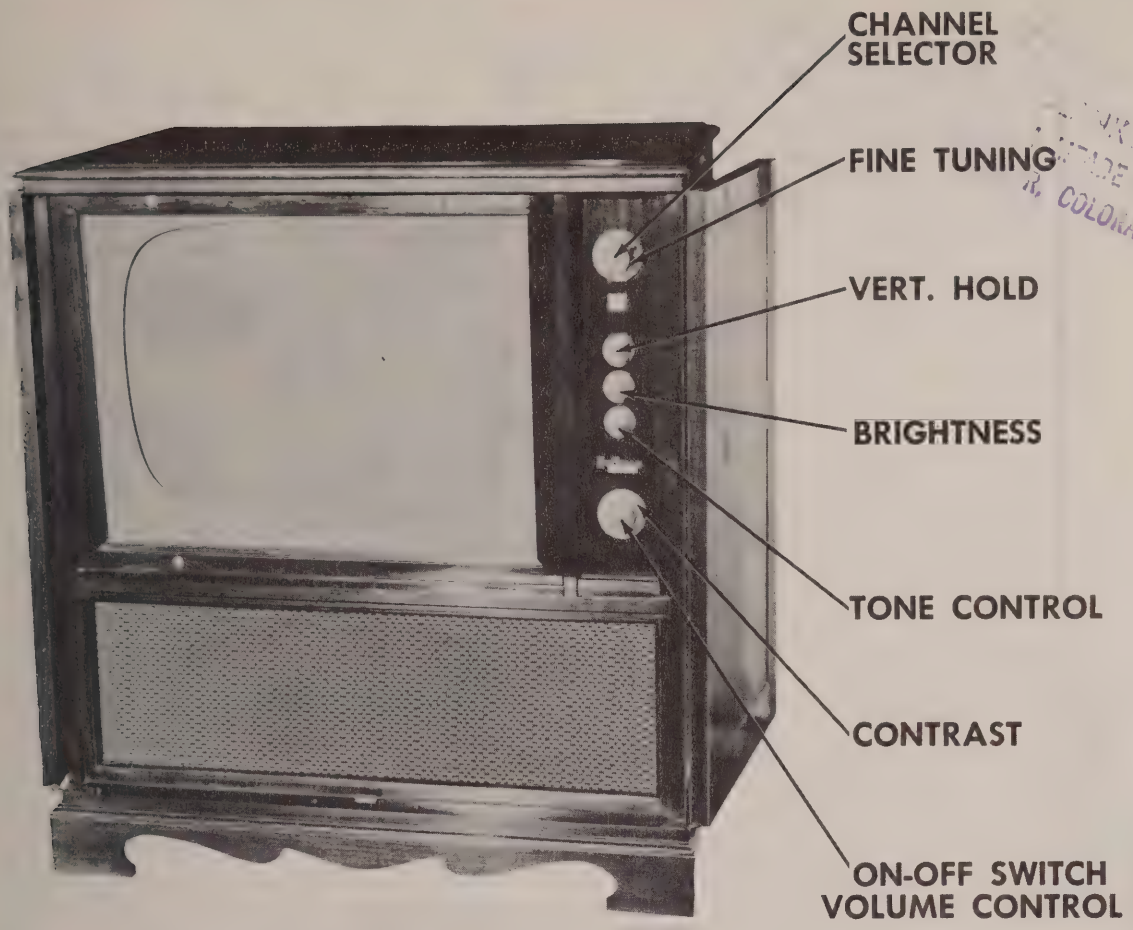

HOFFMAN
MODEL 27M709 (Ch. 197)

TRADE NAME	Hoffman Model 27M709 (Ch. 197)
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles 3, Calif.
TYPE SET	Television Receiver
TUBES	Thirty
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 3.4 Amp @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 45.75 MC, Sound IF 41.25 MC (Intercarrier)

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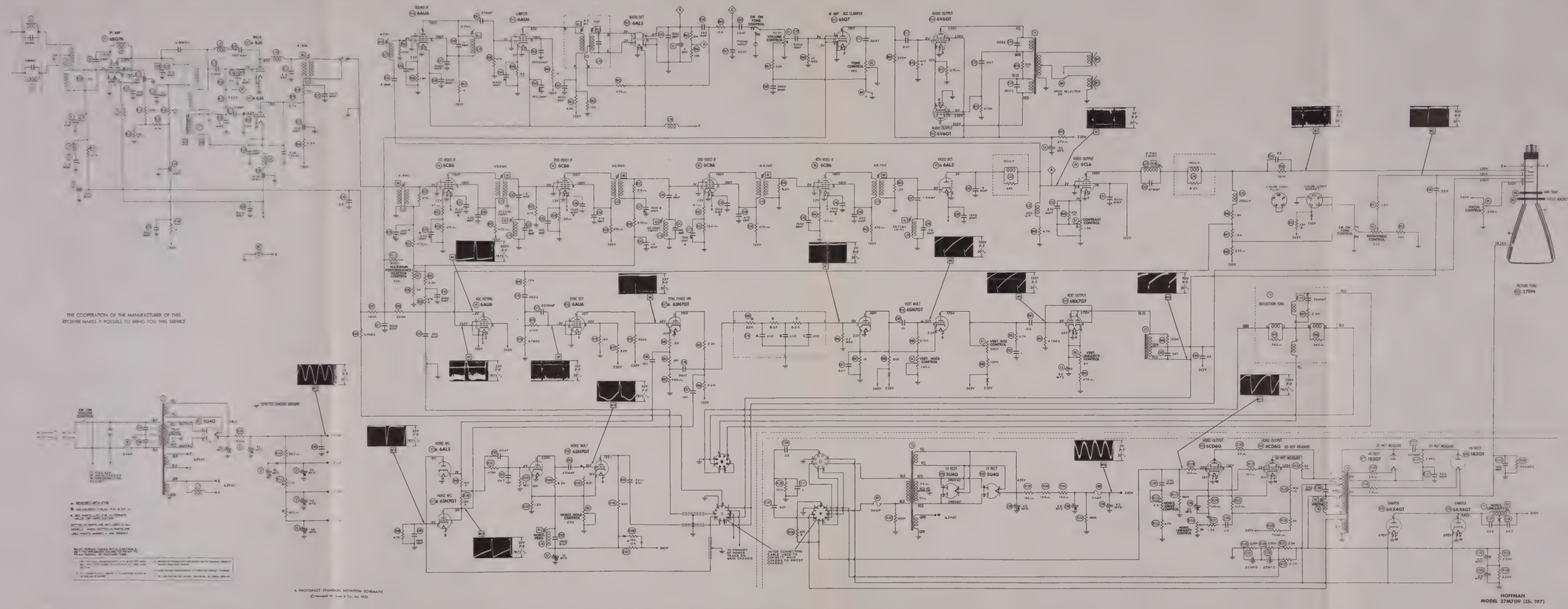
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A PHOTOFACT STANDARD NOTATION SCHEMATIC
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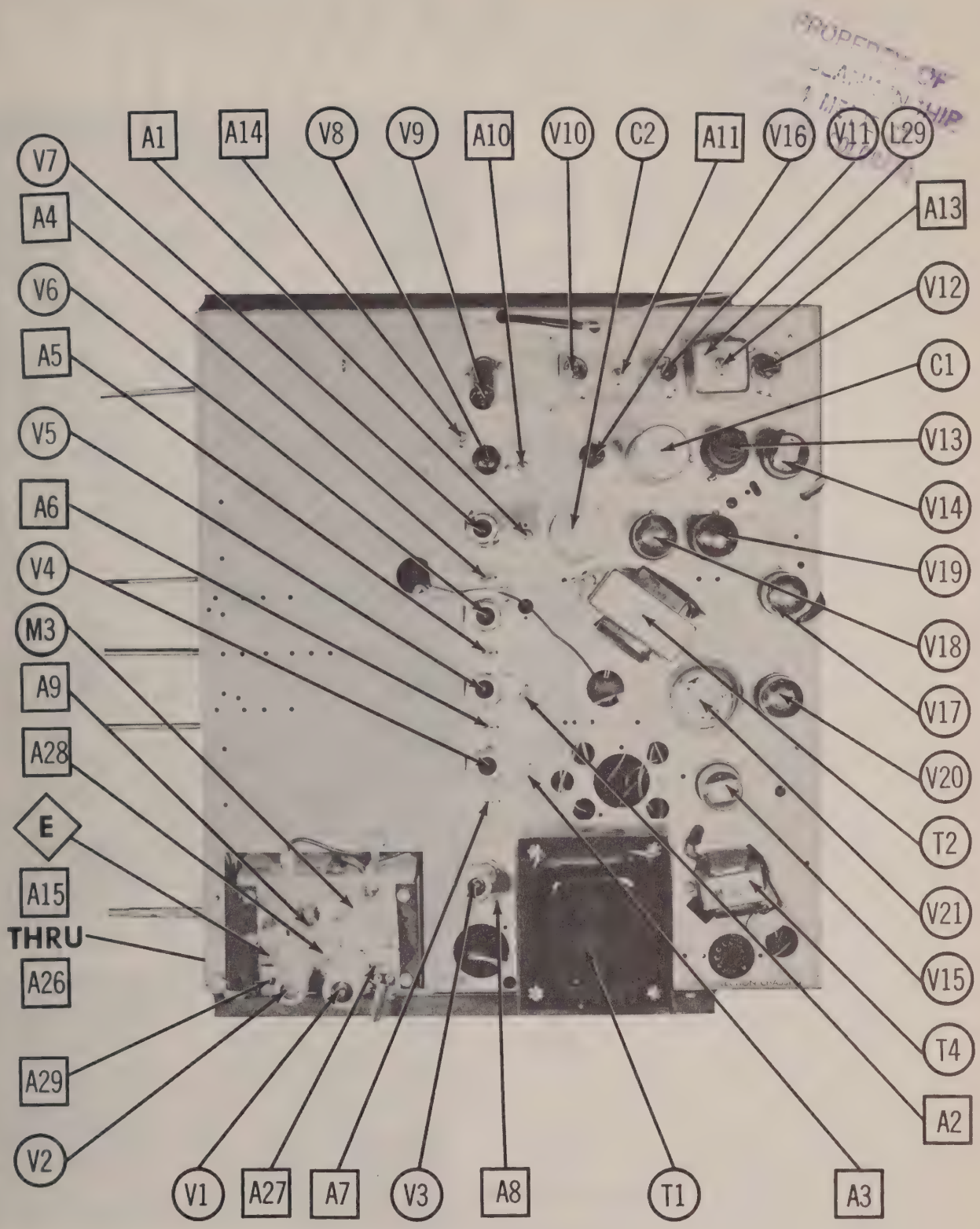
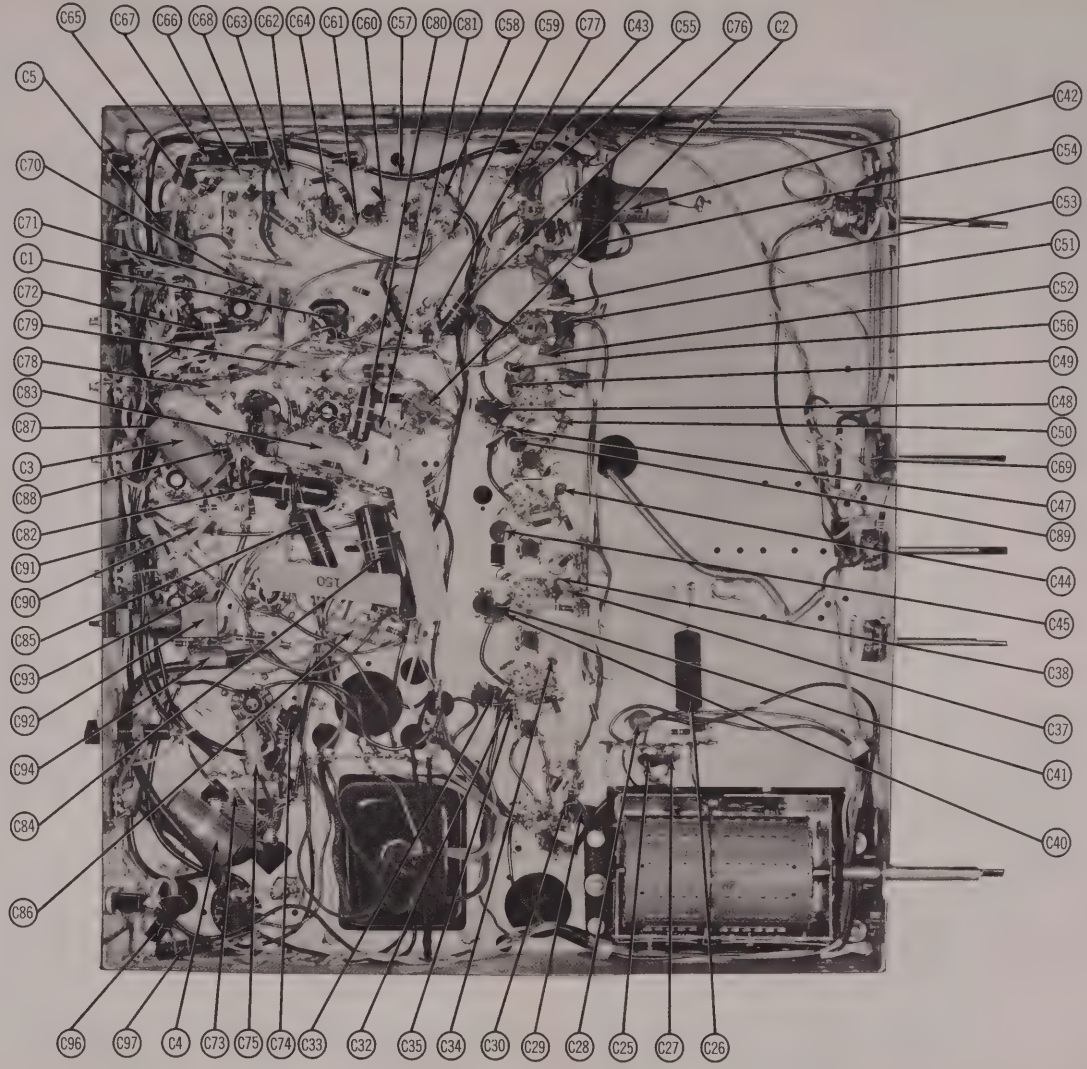


MAIN CHASSIS TOP VIEW



MAIN CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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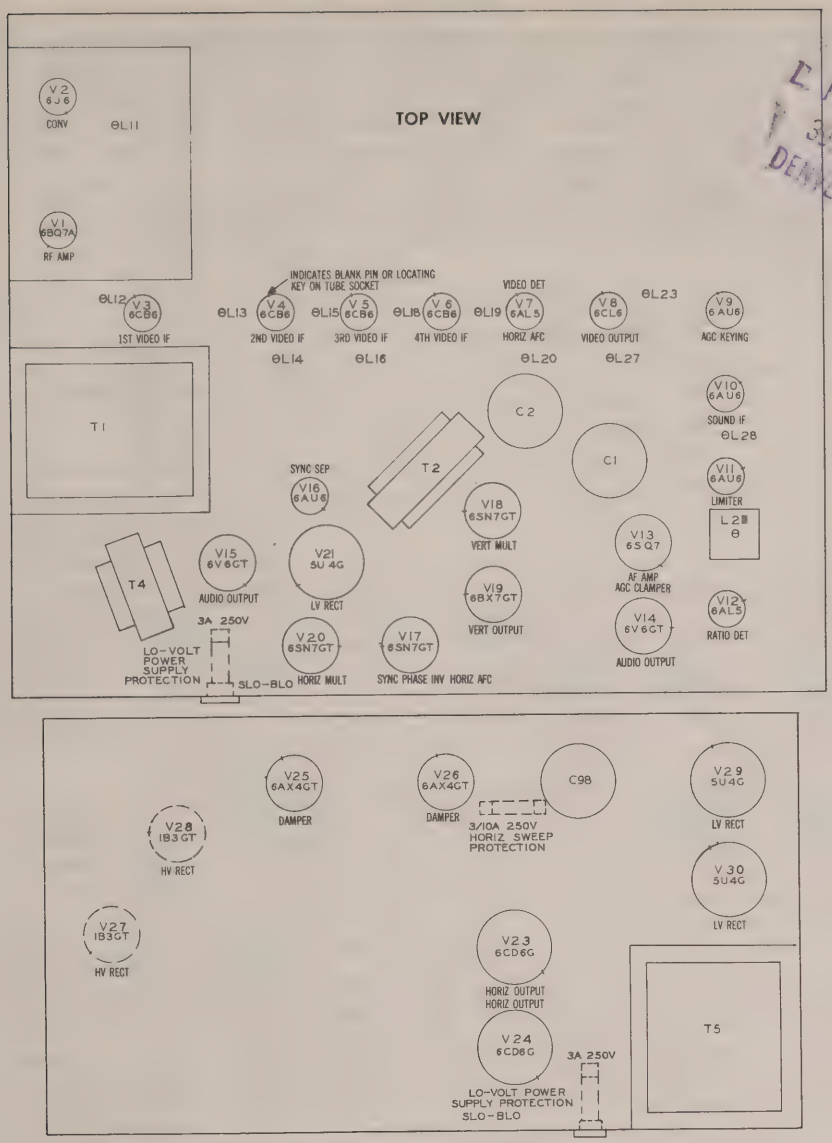
TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21, V29, V30, Fuse (M1 & M7)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V7
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V8, V22
Has pic, no sound - V10, V11, V12, V13, V14, V15
Overloaded picture - V9, V13

SYNC FAILURE
No vert. sync - V17, V18, V19
No horiz. sync - V7, V17, V20
No vert. or horiz. sync - V16, V17

SWEEP FAILURE
No raster, has sound - V20, V22, V23, V24, V25, V26, V27, V28, V29, V30, Fuse (M7, M8)
No vertical deflection - V18, V19
Poor vert. linearity or foldover - V18, V19
Poor horiz. linearity or foldover - V20, V23, V24, V25, V26
Narrow picture - V20, V23, V24, V25, V26, V27, V28, V29, V30
Vert. off freq. - V17, V18, V19
Horiz. off freq. - V7, V17, V20

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Securely tape the high voltage lead and keep away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C42. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	39.75MC (Unmod)	Any	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	41.25MC	"	"	A2	"
3.	"	"	47.25MC	"	"	A3	"
4.	"	"	42.7MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	44.1MC	"	"	A5	"
6.	"	"	42.5MC	"	"	A6	"
7.	"	"	45.6MC	"	"	A7	"
8.	"	"	41.9MC	"	"	A8, A9	Adjust A9 counter clockwise for MINIMUM deflection. If A8 and A9 are both near maximum response at 41.9MC oscillations may occur preventing proper setting of A8.
9.	"	"	45.05MC	"	"	A9	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	44MC (10MC Swp)	39.75MC 42.25MC 45.6MC 45.75MC 47.25MC	Any	Vert. Amp. to point (A). Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A4 thru A9 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to pin 7 (plate) of 6AL5 (V7) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A10, A11, A12	Adjust for maximum response.
12.	"	"	" "	"	DC probe to point (C). Common to point (D).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.01MFD	High side to pin 7 (plate) of 6AL5 (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor, C5. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
12.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A13	Reconnect stabilizer capacitor, C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Turn contrast control to maximum contrast.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 11 of picture tube.	A14	Temporarily detune L27 by touching terminal with screw driver shaft, held in fingers, while at the same time adjusting A14, for MINIMUM deflection on VTVM.

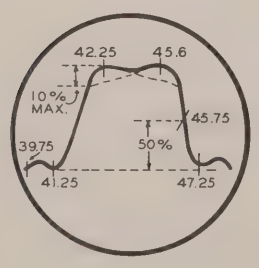


FIG. 1

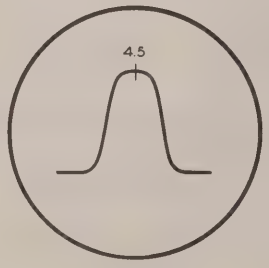


FIG. 2

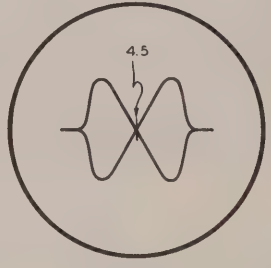


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A15	Adjust to place sound marker in sound trap notch as in Fig. 5. Video marker should be at 50% response.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A16	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A17	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A18	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A19	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A20	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A21	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A24	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A25	
			57MC (10MC Swp)	55.25MC 59.75M	2		A26	

RF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. to point (E). Low side to chassis.	A27 A28 A29	Adjust for maximum response similar to Fig. 6.
16.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make compromise adjustments of A27, A28, A29 with channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

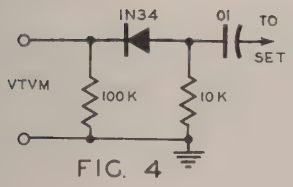


FIG. 4

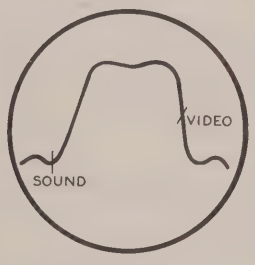


FIG. 5

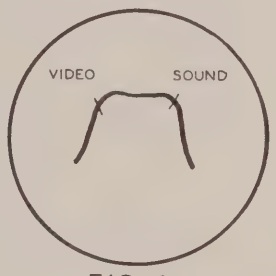
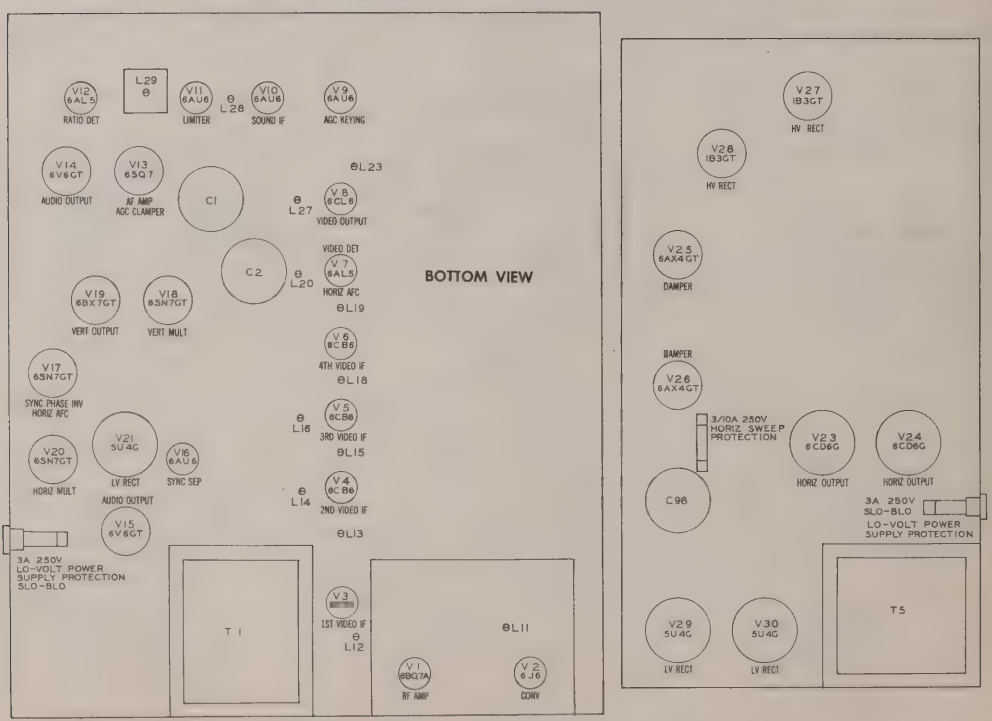


FIG. 6

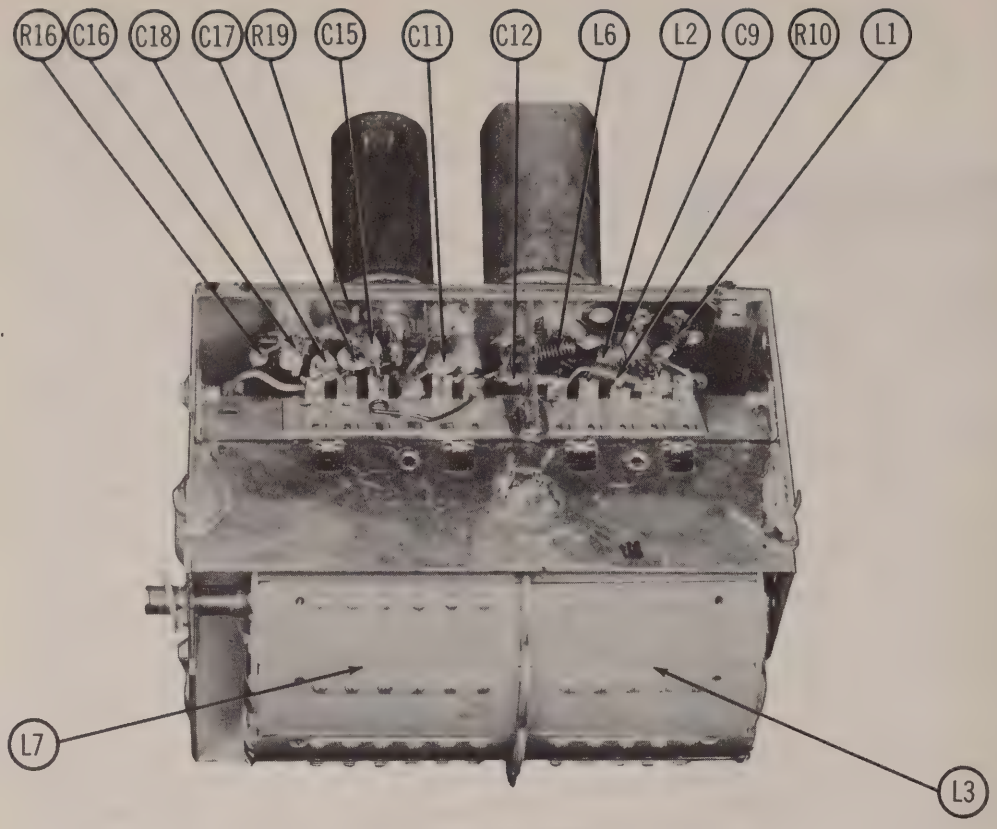
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	750KΩ	0Ω	.1Ω	0Ω	†2KΩ	†220KΩ	INF	0Ω
V 2	6J6	†8.7KΩ	†19KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	40KΩ	167Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 4	6CB6	.1Ω	120KΩ	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 5	6CB6	40KΩ	167Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 6	6CB6	.1Ω	120Ω	.1Ω	0Ω	†3KΩ	†3KΩ	0Ω		
V 7	6AL5	.1Ω	4.7KΩ	.1Ω	0Ω	5.3Meg	0Ω	4.7KΩ		
V 8	6CL6	80Ω	4.7KΩ	†2.6KΩ	.1Ω	0Ω	†5.6KΩ	0Ω	†2.6KΩ	4.7KΩ
V 9	6AU6	†3.8KΩ	†1.8KΩ	†1.8KΩ	†1.8KΩ	400KΩ	†150Ω	†1.8KΩ		
V 10	6AU6	100KΩ	0Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	1.8KΩ		
V 11	6AU6	47KΩ	0Ω	.1Ω	0Ω	†6.6KΩ	†3.6KΩ	82Ω		
V 12	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	20KΩ		
V 13	6SQ7	0Ω	10Meg	0Ω	520KΩ	520KΩ	†220KΩ	.1Ω	0Ω	
V 14	6V6GT	INF	.1Ω	†1.4KΩ	†920Ω	470KΩ	INF	0Ω	270Ω	
V 15	6V6GT	INF	.1Ω	†1.1KΩ	†920Ω	470KΩ	INF	0Ω	270Ω	
V 16	6AU6	5.2Meg	0Ω	.1Ω	0Ω	†330KΩ	†22KΩ	0Ω		
V 17	6SN7GT	5.3Meg	5.3Meg	4.7KΩ	†330KΩ	†6.2KΩ	4.2KΩ	.1Ω	0Ω	
V 18	6SN7GT	4.7Meg	†180KΩ	1KΩ	700KΩ	†190KΩ	†1KΩ	.1Ω	0Ω	
V 19	6BX7GT	4.7Meg	■2.8KΩ	3.4KΩ	4.7Meg	■2.8KΩ	3.4KΩ	.1Ω	0Ω	
V 20	6SN7GT	4.7Meg	†15KΩ	1.2KΩ	95KΩ	†126KΩ	1.2KΩ	.1Ω	0Ω	
V 21	5U4G	INF	13.5KΩ	INF	59Ω	INF	57Ω	INF	13.5KΩ	
V 22	27EP4	0Ω	45KΩ	PIN 6 †225Ω	PIN 10 ■1KΩ	PIN 11 ‡335KΩ	PIN 12 .1Ω			
V 23	6CD6G	INF	.1Ω	100Ω	‡10.5KΩ	180KΩ	180KΩ	0Ω	‡10.6KΩ	TOP CAP ■ 40.5Ω
V 24	6CD6G	INF	.1Ω	100Ω	‡10.5KΩ	180KΩ	180KΩ	0Ω	‡10.6KΩ	TOP CAP ■40.5Ω
V 25	6AX4GT	INF	INF	INF	‡5.5KΩ	‡460Ω	INF	.1Ω	0Ω	
V 26	6AX4GT	INF	INF	INF	INF	‡460Ω	‡450Ω	.1Ω	0Ω	
V 27	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP ■ 137Ω
V 28	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								TOP CAP INF
V 29	5U4G	INF	100KΩ	INF	57Ω	INF	54Ω	‡300Ω	100KΩ	
V 30	5U4G	INF	100KΩ	INF	57Ω	INF	54Ω	‡150Ω	100KΩ	

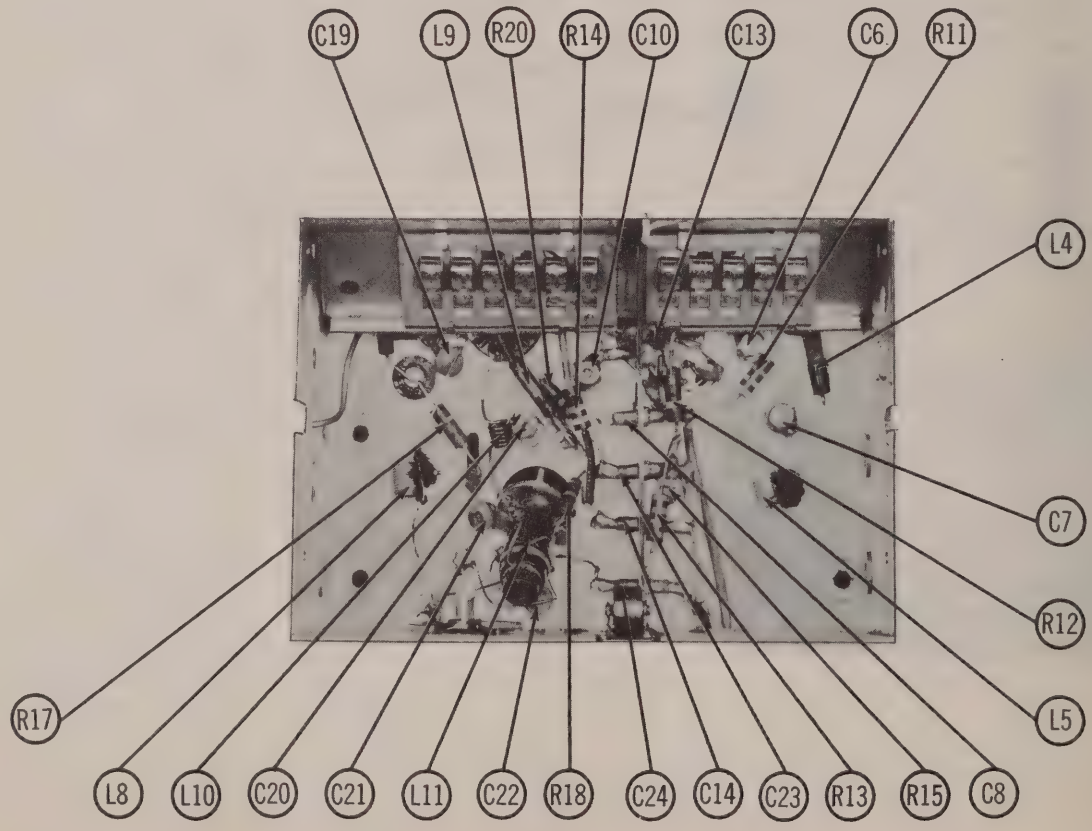
† MEASURED FROM PIN 8 OF V21.
‡ MEASURED FROM PIN 2 OF V30.
■ MEASURED FROM PIN 3 OF V24.



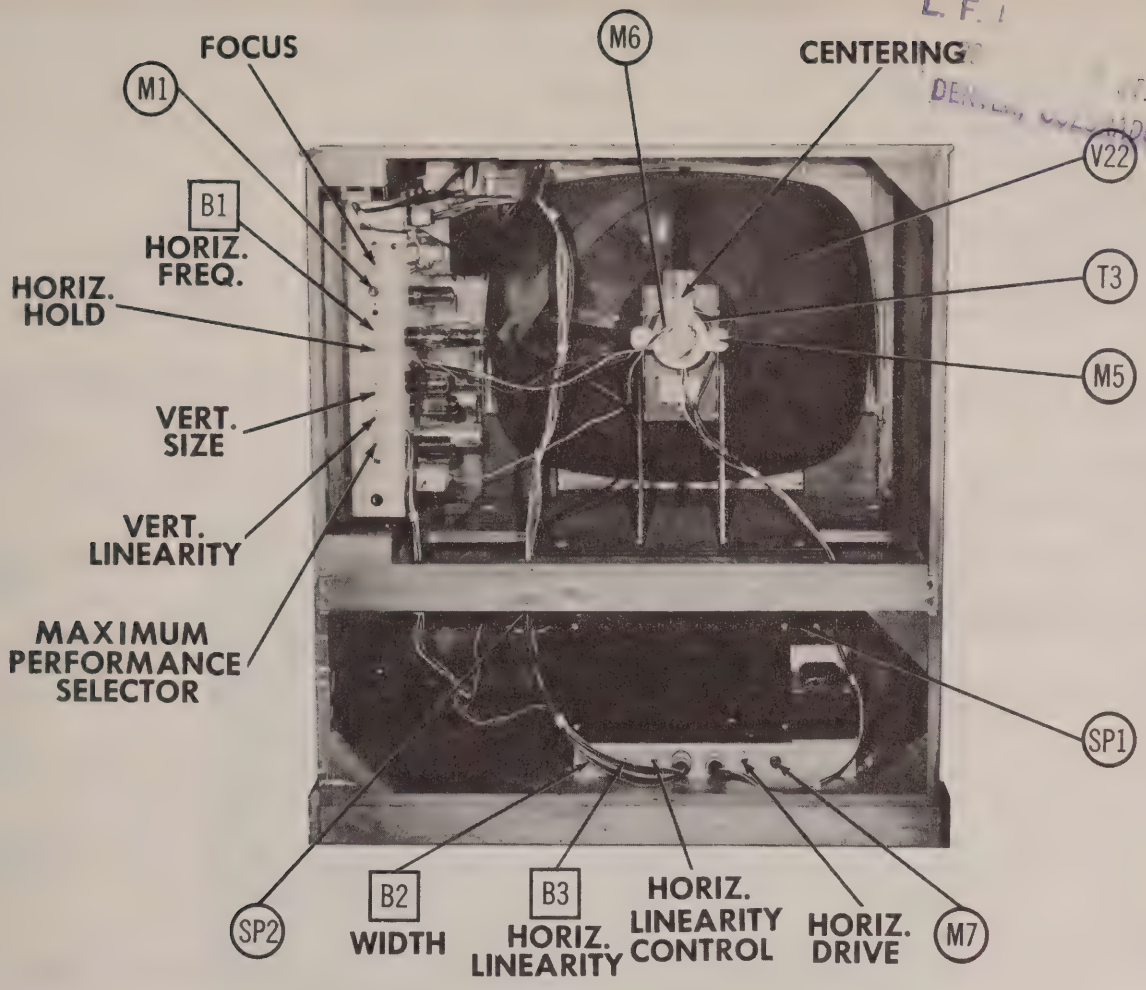
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold control for horizontal synchronization without bending of vertical lines near the top of the picture.

If unable to obtain satisfactory horizontal synchronization by means of the horizontal hold control, adjust the horizontal frequency slug (B1).

Turn B1 counter clockwise while turning the channel selector on and off channel until sync is lost. Turn B1 clockwise and note the number of diagonal bars just before sync pull in.

There should be not less than 2 bars.

Continue turning B1 until sync is lost again, then turn B1 counter clockwise and note the point where sync pull in occurs.

Turn B1 an additional ½ turn counter clockwise.

Adjust the horizontal drive control counter clockwise as far as possible without the presence of a vertical white bar in the picture.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution, V23, V24, V25, V26, V29, V30 and V20. Check adjustment of width, (B2), and horizontal linearity, (B3). Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check T6, T3A, R126, R125, C105, C106, C107 and other associated circuit components.	Check components associated with V30.

DRIVE LINES

Substitute V23, V24, V25, V26 and V20. Check adjustment of horizontal drive control. Check C104, C106, C107, T6, T3A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V23, V24, V25, V26, V20, V29 and V30. Check adjustment of width, (B2), horizontal linearity, (B3) and horizontal drive control. Check T6, T3A, C105 and other associated components.

FOLDS

Check by substitution V25, V26, V23 and V24. Check C105, C106, C107, T6, T3A and other associated components.

XMAS TREE EFFECT

Substitute V20. Check C92, C93, C94, L30 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V18 and V19. Check waveform at W9.

If Satisfactory	If Unsatisfactory
Check T2, T3B, R131, R132 and other associated circuit components.	Check C80, C82, C83, R88, R90 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V18 and V19. Check adjustment of height and vertical linearity controls. Check components associated with V18 and V19 especially T2, T3B, C83 and R92.

COMPRESSED AT BOTTOM

Substitute V18 and V19. Check associated circuit components especially C3, T2 and T3B.

COMPRESSED AT TOP

Substitute V18 and V19. Check C82, C83 and other components associated with V18 and V19.

FOLDS

Substitute V18 and V19. Check C82, C83, T2, T3B and other associated circuit components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V17, V7 and V20. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C87, C88, C92, C93 and other associated components.	Check C89, C109, C110, C111, R128, and T6.

CRITICAL HOLD

Check by substitution V20, V17 and V7. Check components associated with V7B, V17B and V20 especially C89, C92, C93, C109, C110 and C111.

HORIZONTAL PULL

Substitute V20, V23 and V24. Check R99, R100, R101, R103, C90, C91. Check other components that form the horizontal AFC network.

VERTICAL

LOSS OF SYNC

Check by substitution V16, V17 and V18. Check C80, C78, vertical intergrator network and other assoicated components. Check components associated with V16 and V17A.

CRITICAL HOLD

Check by substitution V16, V17 and V18. Check C80, C83, C78, Vertical intergrator network and other components associated with V16, V17A and V18.

TRIGGERING

Substitute V16, V17 and V18. Check circuit near these stages for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V8. Check C54, C51, R46, R47, L24 and L25. Check picture tube and other associated components.

SOUND BARS

Check local oscillator adjustment in RF tuner. Check adjustment of 4.5 MC trap, A14. Check video IF alignment.

NEGATIVE PICTURE

Check by substitution V7 and V8. Check components associated with V7A and V8 for change of value of failure. Check picture tube and associated components. Check video IF tubes and components.

POOR CONTRAST

Check by substitution V7 and V8. Check associated circuit components. Check picture tube.

SMEAR

Check by substitution V7 and V8. Check C54 and C51. Check R46 and R47 for Change of value. Check L24 and L25. Check picture tube and associated components.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tubes in RF tuner, video IF, video detector and video amplifier tubes for heater to cathode leakage.

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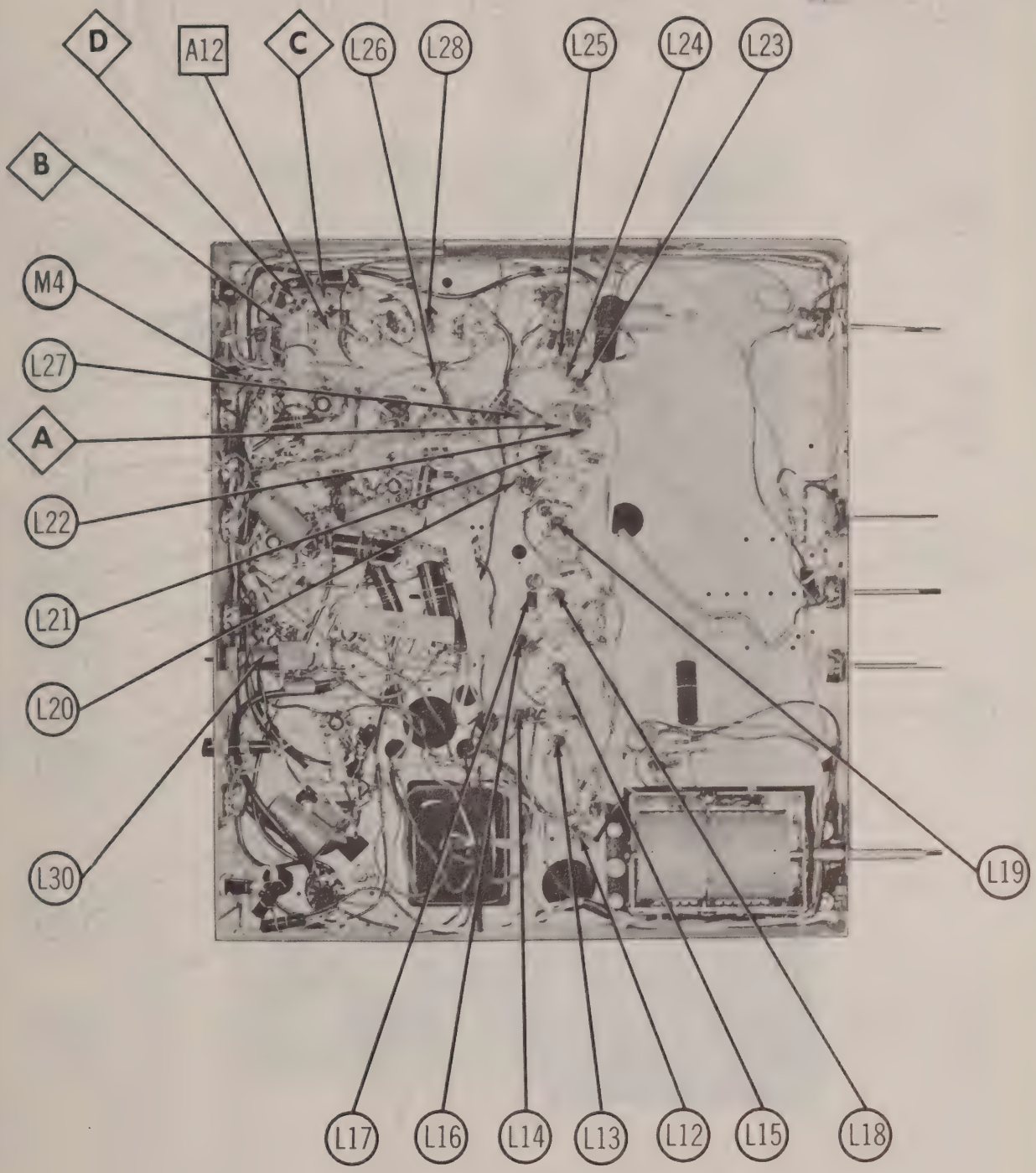
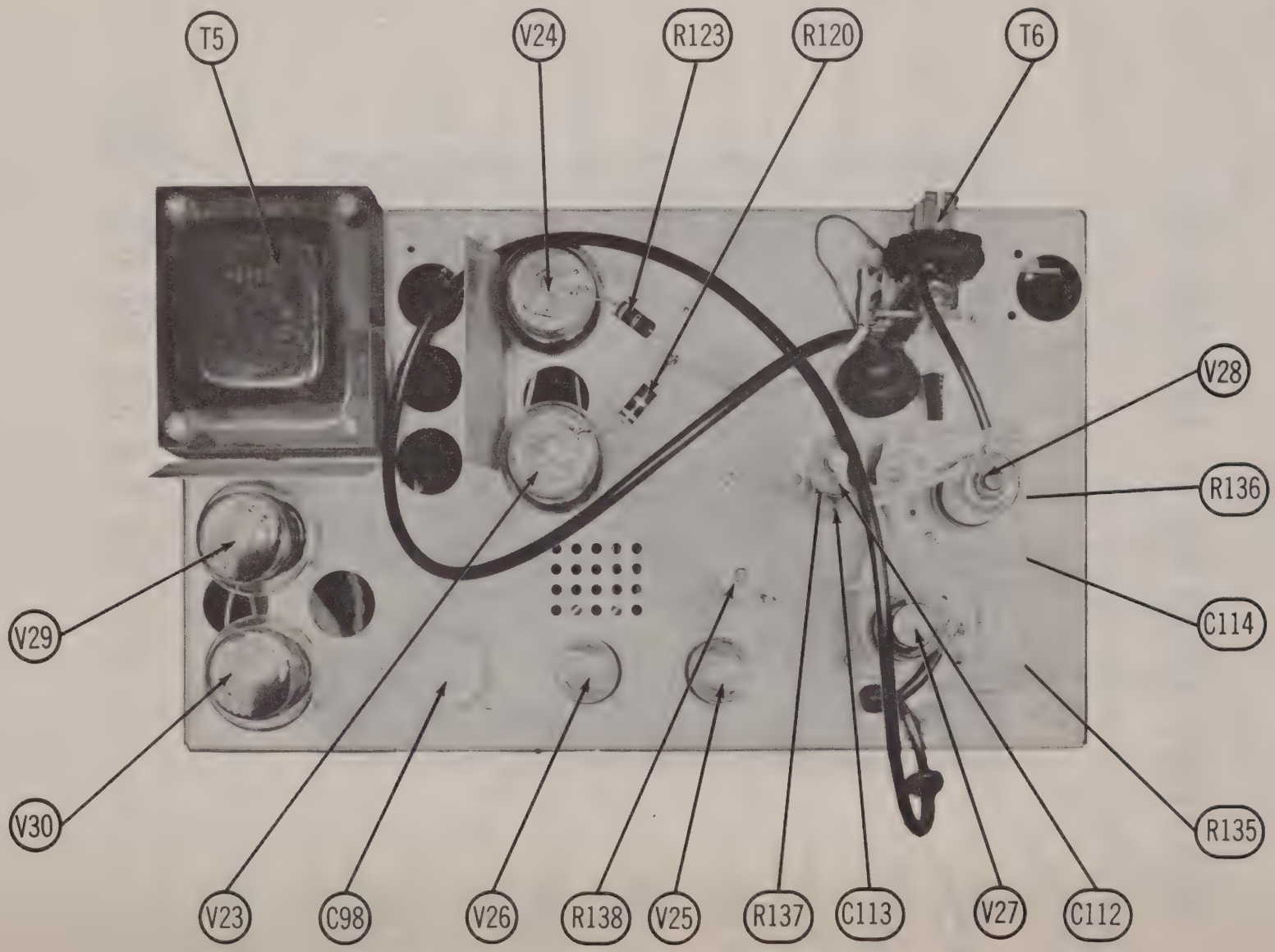


HOFFMAN
MODEL 27M709 (Ch. 197)

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



SWEEP CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

MAIN CHASSIS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

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ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Detector - Horiz. AFC	6AL5	6AL5	6BT	
V8	Video Output	6CL6	6CL6	6CL6	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Limiter	6AU6	6AU6	7BK	
V12	Ratio Detector	6AL5	6AL5	6BT	
V13	AF Amp. AGC Delay	6SQ7	6SQ7	8Q	
V14	Audio Output	6V6GT	6V6GT	7S	
V15	Audio Output	6V6GT	6V6GT	7S	
V16	Sync Separator	6AU6	6AU6	7BK	
V17	Sync Phase Inv. - Horiz. AFC	6SN7GT	6SN7GT	8BD	
V18	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V19	Vert. Output	6BX7GT	6BX7GT	8BD	
V20	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	HOFFMAN PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.		
V22	27EP4	27EP4 27GP4	27EP4	12D 12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	475		E4C335				FP262	TVL-3843	
B	▲30	475						TC84		
C	■30	475								
C2A	■60	350		E4D625		CO23		FP391.1	TVL-3640	
B	▲20	475				BR2050A		TC78	TVA-1804	
C	▲40	350								
D	10	350								
C3	50	150		PRS150/50		BR5015A		TC49	TVA-1414	
C4	20	450		PRS450/20		BR2045A		TC75	TVA-1709	
C5	5	50		PRS150/4		BR550		TC30	TVA-1303	
C6	3-8				829-10					
C7	3-8				829-10					
C8	1000			CN-1-001	MFT-1000				503C-D1	
C9	3			SI3NP0	TCZ-3		NP0K-030		5TCCB-V3	
C10	.5-3				829-3			CT565A		
C11	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C12	1000			CN-1-001	MFT-1000				503C-D1	
C13	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	1000			CN-1-001	MFT-1000				503C-D1	
C15	51									
C16	.5-3				829-3			CT565A		
C17	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C18	5			SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C19	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C20	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C21	6.8			SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	1000			CN-1-001	MFT-1000				503C-D1	
C24	1000			CN-1-001	MFT-1000				503C-D1	
C25	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C26	.22	200	4131	P488-22		PTE4P22		PT4025	4TM-P22	
C27	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C28	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C29A	1500		14029	BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	Note 1
B	1500									Note 1
C30	470		14027	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C31	1500		14030	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 1
C32	1.5		4082	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C33	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C34	470		14027	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C35	470		14027	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C36	1500		14030	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 4
C37A	1500		14029	BPD-2X0015	DD2-152	TM5DD15	812-0015	DCD-5215	5HK-2D15	Note 2
B	1500									Note 2
C38	470		14027	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C39	1500		14030	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 2
C40	5		4081	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C41	100	500		1469-0001		5R5T1		MCB235	MS-31	
C42	1.0	100	14200	484-1.0		PJ2W1		PT41	2TM-M1	
C43	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	470		14027	BPD-00047	D6-471		GP2K-471	UC-5347	5GA-T47	
C45	1500		14030	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 3
C46	1500		14030	BPD-0015	DD-152	TM5D15	801-0015	DC-5215	5HK-D15	Note 3
C47	1.5		4082	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C48	20			SI20NP0	TCZ-20		NP0K-200	ZT-542	5TCC-Q2	
C49	1500		14030	BPD-0015	TM5D15	801-0015	DC-5215	DC-5215	5HK-D15	
C50	5		4081	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C51	5000		4029	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	270	500	4023			SR5Q5		MCB225	MS-45	
C53	47	500		1469-00005		PTR4P32		PT4025	4TM-P32	
C54	.22	200	4131	P488-22					10GA-T3	
C55	500	1000	14017						5TCCB-Y47	
C56	5		4081	S1SNP0	TCZ-4.7		NP0K-050	ZT-555		
C57	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C58	500	400	4147	P88-001	D6-102	TP5D1	GP2L-102	PT621	5TM-D1	
C59	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C60	47			S14TNP0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	
C61	47		14005	S147	D6-470	TM5Q5	GP1K-470	DC-5447	5GA-Q47	
C62	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C63	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C64A	4000	}	4036	BPD-2X004	DD3-402	TM5DD4	523-004	DCD-534	5HK-2D4	
B	4000									
C65	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C66	390	500	14010	1469-0004		SR5T4		MCB243	MS-34	
C67	.0047	400	4127	P888-0047	D6-472	PTE6D47	GP3-333-472	PT6347	6TM-D47	
C68	.0047	400	4127	P888-0047	D6-472	PTE6D47	GP3-333-472	PT6347	6TM-D47	
C69	.047		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C70	5000		4029	BPD-005	MD-502	TM5D5	5U-005	DC-525	5HK-D5	
C71	.0047	400	4128	P888-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	
C72	.047	200	4158	P888-047	DF-503	PTE4S47		PT4147	4TM-S47	
C73	.0022	400	4136	P888-0022	D6-222	PTE6D22	GP3-333-222	PT6222	6TM-D22	
C74	.0022	400	4136	P888-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C75	.047	200	4131	P288-047	DF-503	PTE4S47		PT4147	4TM-S47	
C76	.0022	400	4136	P888-0022	D6-222	PTE6D22	GP3-333-222	PT6222	6TM-D22	
C77	220		4026	SI220	D6-221		GP1K-221	UC-5322	5GA-T22	
C78	.0047	400	4127	P888-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	
C78A	.003		{ P888-0003	{ eCP-100	{ PTE6D3	{ e1405-01	{ PT625	{ e10C1		
B	.005		e9695	P888-005		PTE6D5		PT625		
C	.005		{ P888-005	{ P888-005		PTE6D5		PT625		
C80	.01	600	4105	P888-01	D6-103	PTE6P1	GP3-333-103	PT601	6TM-P1	
C81	.047	200	4147	P288-047	DF-503	PTE4S47		PT4147	4TM-S47	
C82	.1	600	14133							
C83	.22	600	14197	P888-22		PTE6P22		PT6025	6TM-P22	
C84	.22	400	14103	P488-22		PTE4P22		PT4025	4TM-P22	
C85	.047	600	4133	P888-047	DF-503	PTE6S47		PT6147	6TM-S47	
C86	.022	600	4124	P888-022	DF-203	PTE6S22		PT6122	6TM-S22	
C87	.001	400	4175	P888-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C88	.001	400	4175	P888-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C89	1500			BPD-0015	DD-152	TM5D15	501-0015	DC-5215	5HK-D15	
C90	.0047	400		P888-0047	D6-472	PTE6D47	GP2-333-472	PT6347	6TM-D47	
C91	.047	200		P288-047	DF-503	PTE4S47		PT4147	4TM-S47	
C92	1900	500		1464-004		EMB5D4		MCB463	MS-34	
C93	470	500		1469-0005		2R5T5		MCB245	MS-35	
C94	3300	500	14039							
C95	.1	600	4144	P888-1	DF-104	PTE6P1		PT601	6TM-P1	Note 4
C96	.01	600	4105	6892X-01		P2681		PT611	6TM-S1	
C97	.01	600	4105	6892X-01		P2681		.611	6TM-S1	

Note 1. Some Models combine C29B and C31 in dual unit. C29A then becomes a single unit.
Note 2. Some Models combine C37B and C39 in dual unit. C37A then becomes a single unit.
Note 3. Some Models combine C45 and C46 in dual unit.
Note 4. Not used in all models.
• Items C78A, C79B, C79C, R85A, R85B, R85C are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HOFFMAN PART No	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω		H-4902		RTV-381		WF152	Contrast-Panel-Note
B	500KΩ						UR55T154	Volume & Switch Tap② 100KΩ-Rear
R2	1 Meg		4900				US-26	Tone & Phone Switch
R3A	50KΩ		H-4898	Q1l-123	AG-44-S	B-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	1 Meg		H-4899	Q1l-137	AG-61-S	B-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	50KΩ		H-4853	Q1l-123	AG-44-S	AB-31	SU-35	Maximum Performance Selector
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	5000Ω		H-4865	Q1l-114	AG-19-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	500KΩ		H-4897	Q13-133	AG-58-S	AB-59	SU-50	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	25KΩ		H-4859	Q1l-120	AG-40-S	AB-26	SU-29	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	2 Meg		H-4864	Q1l-139	AG-63-S	AB-75	SU-58	Focus
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R9A

Note: Some Models may use alternate control (part #H-4879)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R10	15KΩ				
R11	47KΩ				
R12	100KΩ				
R13	330KΩ				
R14	470Ω			BTS-470	
R15	180KΩ			BTS-180K	
R16	15KΩ				
R17	220KΩ				
R18	15KΩ			BTS-15K	
R19	10KΩ			BTS-10K	
R20	4700Ω			BTS-4700	
R21	47Ω		4664	BTS-470	
R22	47KΩ-5%		4537		
R23	47Ω		4639	BTS-47	
R24	120Ω		4546	BTS-120	
R25	470Ω		4664	BTS-470	
R26	15KΩ		4521	BTS-15K	
R27	47KΩ-5%		4537		
R28	120Ω		4546	BTS-120	
R29	470Ω		4664	BTS-470	
R30	470Ω		4664	BTS-470	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R31	3900Ω-5%		4654	BTS-3900 -5%	
R32	47Ω		4639	BTS-47	
R33	120Ω		4546	BTS-120	
R34	470Ω		4664	BTS-470	
R35	3300Ω		4607	BTS-3300	
R36	470KΩ-5%		34550	BTS-470K-5%	
R37	180KΩ		4634	BTS-180K	
R38	330KΩ-5%		34533	BTS-330K-5%	
R39	4.7Meg		34659	BTS-4.7Meg	
R40	8200Ω-5%		4641		
R41	120Ω		4546	BTS-120	
R42	470Ω		4664	BTS-470	
R43	12KΩ-5%		4656		
R44	4700Ω-5%		4649	BTS-4700-5%	
R45	470Ω		4638	BTS-470	
R46	1800Ω	1	24518	BTA-1800	
R47	1800Ω	1	24518	BTA-1800	
R48	220Ω		4563	BTS-220	
R49	15KΩ		4619	BTS-15K	
R50	330KΩ		4677	BTS-330K	
R51	22KΩ		4601	BTS-22K	

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R52	39KΩ		24839	BTS-39K	
R53	33KΩ	1	24839	BTA-33K	Note 1
R54	2300Ω-5%		4613	BTS-2300-5%	
R55	100KΩ		4611	BTS-100K	
R56	1800Ω		4660	BTS-1800	
R57	1000Ω		4643	BTS-1000	
R58	47KΩ		4604		
R59	82Ω		4598	BTS-82	
R60	1000Ω		4643	BTS-1000	
R61	6800Ω	1	4608		
R62	10KΩ	1	4644	BTA-10K	
R63	470Ω		4638	BTS-470	
R64	15KΩ		4531	BTS-15K	
R65	10KΩ		4597	BTS-10K	
R66	10KΩ		4597	BTS-10K	
R67	33KΩ		24837	BTS-33K	
R68	10Meg		4905	BTS-10Meg	
R69	220KΩ		4618	BTS-220K	
R70	470KΩ		4606	BTS-470K	
R71	270Ω			BTS-270	
R72	470KΩ		4623	BTS-470K	
R73	370Ω	1	14369		
R74	330Ω		4538	BTA-330	
R75	470KΩ		4623	BTS-470K	
R76	4.7Meg		4544	BTS-4.7Meg	
R77	82KΩ		34670	BTS-82K	
R78	330KΩ		34531	BTS-330K	
R79	18KΩ		24670	BTS-18K	
R80	1800Ω-5%		24517	BTS-1800-5%	
R81	1800Ω-5%		24517	BTS-1800-5%	
R82	560Ω		4507	BTS-560	
R83	2200Ω-5%		34525	BTS-2200-5%	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA HOFFMAN PART No.	IRC PART No.	NOTES
R84	2200Ω-5%		24325	BTS-2200-5%	
R85A	22KΩ			BTS-22K	
B	8300Ω		•9005	BTS-8300	
C	8300Ω			BTS-8300	
R86	4.7Meg		4544	BTS-4.7Meg	
R87	1000Ω		4689	BTS-1000	
R88	180KΩ	1	34597	BTA-180K	
R89	270KΩ		4602	BTS-270K	
R90	100KΩ		4671	BTS-100K	
R91	470KΩ		4678	BTS-470K	
R92	4.7Meg		34659	BTS-4.7Meg	
R93	470Ω		4664	BTS-470	
R94	150KΩ	1	24697	BTA-150K	
R95	560Ω		4507	BTS-560	
R96	560Ω		4507	BTS-560	
R97	220Ω		4560	BTS-2200	
R98	4700Ω		4678	BTS-4700	
R99	100KΩ		4671	BTS-100K	
R100	100KΩ		4671	BTS-100K	
R101	470KΩ		4606	BTS-470K	
R102	1200Ω		4553	BTS-1200	
R103	4.7Meg		4544	BTS-4.7Meg	
R104	8200Ω		4661	BTS-8200	
R105	82KΩ		24670	BTS-82K	
R106	120KΩ		4548	BTS-120K	
R107	10KΩ		4597	BTS-10K	
R108	15KΩ		4618	BTS-15K	Note 1
R109	150Ω	10	4730		
R110	500Ω	15	4756	3D-500	
R111A	1100Ω	10	4731		
B	800Ω				
R112	1.8Meg			BTS-1.8Meg	

Note 1. Not used in all Models.
• Items R85A, R85B, R85C, C78A, C78B, C79C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ①1.6A	730VCT ②.186A	5VAC ③3A	6.3VAC ④ 85A SEC. 4 6.3VAC ⑤8.7A	5053	P-8165 ②	P-3070	TP-360①	R-37BC	20T70①

① Drill new mounting holes.
② Do not use low taps on high voltage secondary.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI	RATING DC RESISTANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	1800Ω tap ① 5Ω		5179	A-8141	A-3039	TSO-12	A-104X		Vert. Output Trans.
T3A	30Ω		9748						Horiz.Deflection Coils
B	67Ω								Vert.Deflection Coils

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T4	2.7KΩ	3.4Ω tap ② 1.7Ω	190Ω	.4Ω tap ③ .18Ω	5170					
	PRI. 2 2.7KΩ		PRI. 2 176Ω							

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA HOFFMAN PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3.4Ω	9088	12J11	12A31	
SP2	5 1/4"	PM	3.4Ω	9091	52524	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	IF Trap	0Ω						Wound on 68MMF Cap.
L2	IF Trap	0Ω						Wound on 68MMF Cap.
L3A	Ant.Coil	0Ω CT	0Ω	5360R				Channel 2
B	Ant.Coil	0Ω CT	0Ω	5361R				Channel 3
C	Ant. Coil	0Ω CT	0Ω	5362R				Channel 4
D	Ant. Coil	0Ω CT	0Ω	5363R				Channel 5
E	Ant. Coil	0Ω CT	0Ω	5364R				Channel 6
F	Ant. Coil	0Ω CT	0Ω	5365R				Channel 7
G	Ant. Coil	0Ω CT	0Ω	5366R				Channel 8
H	Ant. Coil	0Ω CT	0Ω	5367R				Channel 9
I	Ant. Coil	0Ω CT	0Ω	5368R				Channel 10
J	Ant. Coil	0Ω CT	0Ω	5369R				Channel 11
K	Ant. Coil	0Ω CT	0Ω	5370R				Channel 12
L	Ant. Coil	0Ω CT	0Ω	5371R				Channel 13
L4	IF Trap	.9Ω						

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L6	Fil.Choke	0Ω						
L6	Neutr.Coil	0Ω						
L7A	RF, Mixer Grid & Osc. Coil	0Ω		5348R				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω		5349R				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω		5350R				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω		5351R				Channel 5
E	RF, Mixer Grid & Osc. Coil	0Ω		5352R				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		5353R				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		5354R				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		5355R				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		5356R				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		5357R				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		5358R				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		5359R				Channel 13
L8	Fil. Choke	0Ω						
L9	Feedback Coil	1.5Ω						
L10	RF Choke	0Ω						
L11	Conv.Plate	0Ω	0Ω	5441		17-4522	6219	
L12	1st.Video IF	.1Ω	.1Ω	5442		17-4523	6219	
L13	2nd.Video IF	.1Ω	.1Ω	5443		17-4523	6219	
L14	47.25MC Trap	.1Ω		5440				
L15	3rd.Video IF	.1Ω	.1Ω	5439		17-4522	6219	
L16	41.25MC Trap	0Ω		5438				
L17	Fil.Choke	0Ω		5133		19-3001	TV-186	6175	.4 Microhenry
L18	4th.Video IF	.1Ω	.1Ω	5439		17-4522		6219	
L19	5th.Video IF	.1Ω	.1Ω	5439		17-4522		6219	
L20	Cathode Trap	.1Ω		5440				
L21	Series Peaking Coil	7Ω		5458		19-4180	TV-153	6179	180 Microhenries, wound on 33KΩ resistor
L22	Shunt Peaking Coil	9Ω		5460		19-3250	TV-185	6181	250 Microhenries
L23	4.5MC Trap	2.1Ω		5462		20-1004	TV-151	1470	
L24	Series Peaking Coil	6.5Ω		5461		19-3180 •	TV-184 •	6180 •	180 Microhenries, wound on 8.2KΩ resistor
L25	Shunt Peaking Coil	9Ω		5460					250 Microhenries .4 Microhenry
L26	Fil.Choke	0Ω		5133					
L27	1st.Sound IF	10Ω		5439		17-3400	TV-151	1470	
L28	2nd.Sound IF	2.6Ω		5437		17-3400	TV-151	1469	
L29	Ratio Det.	5Ω	.2ΩCT	5439		17-3493	TV-115 †	6305 †	Tertiary winding -.9Ω
L30	Horiz.Osc.	55Ω		5300		19-1576	TV-163	6210	

• Parallel with 8.2KΩ resistor
† Use adaptor plate

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	3 Amp. 250V.	9648		313003 (3AG 3A S/B)	342001	MDL3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M2	Pilot Lamp		Channel Indicator
M3	RF Tuner	9758	
M4	Switch	9028	Speaker Selector
M5	Focus Magnet	9763	Includes centering device
M6	Ion Trap	9694	
	Cabinet	7694	
	Back Assembly	33591	
	Safety Glass	775	
	Mask	3982	
	Knob	33564C	Channel Selector (Assy)
	Knob	33520C	Off/On Volume
	Knob	33505	Contrast
	Knob	33588C	Brightness
	Knob	33589C	Vertic al Hold
	Knob Assembly	33590C	Function Selector

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PARTS LIST AND DESCRIPTIONS (Continued)

SWEEP CHASSIS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
V23	Horiz. Output	6CD6G	6CD6G	5BT	
V24	Horiz. Output	6CD6G	6CD6G	5BT	
V25	Damper	6AX4GT	6AX4GT	4CG	
V26	Damper	6AX4GT	6AX4GT	4CG	
V27	HV Rectifier	1B3GT	1B3GT	3C	
V28	HV Rectifier	1B3GT	1B3GT	3C	
V29	LV Rectifier	5U4G	5U4G	5T	
V30	LV Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C98A	▲40	450	4248	AFH4-81		DO56		FP444.8	TVL-4742	
B	■30	450								
C	▲25	50								
C99	60	450	4242	AFH1-54		A050		FP237	TVL-2759	
C100	20	450	4233	PRS450/20		BR2045A		TC75	TVA-1709	
C101	20	450	4233	PRS450/20		BR2045A		TC75	TVA-1709	
C102	20	450	4233	PRS450/20		BR2045A		TC75	TVA-1709	
C103	20	450	4233	PRS450/20		BR2045A		TC75	TVA-1709	
C104	270	500								
C105	.25	600	4139	684-25		PTE6P25		PT6025	6TM-P25	
C106	.022	400		P488-022		PTE4S22		PT4122	4TM-S22	
C107	.039	400	4194							
C108	200	5000								
C109	.25	600	4139	684-25		PTE6P25		PT6025	6TM-P25	
C110	.047	600	4141	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C111	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C112	500	20000	4056	HV20C	TV3-502	MM-C20T5	413-501	HV20035A	20DK-T5	
C113	500	20000	4056	HV20C	TV3-502	MM-C20T5	413-501	HV20035A	20DK-T5	
C114	500	30000	14037							
C115	56	2000							20GA-Q56	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R113A	3000Ω	½	H-4850	Q11-112	AG-19-S	AB-8	SU-8	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R113A
R114A	3000Ω	½	H-4850	Q11-112	AG-19-S	AB-8	SU-8	Horiz. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R114A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOFFMAN PART No.	IRC PART No.	
R115	4700Ω	½	4576	BTS-4700	
R116	470KΩ	½	34450	BTS-470K	
R117	180KΩ	½	4462	BTS-180K	
R118	100Ω	½	4566		
R119	100Ω	½	4566		
R120	33Ω	2	14549		
R121	100Ω	½	4566		
R122	100Ω	½	4566		
R123	33Ω	2	14549		
R124	100Ω	10		1 3/4A-100	
R125	5000Ω	20	4765	2D-5000	
R126	5000Ω	20	4765	2D-5000	
R127	1500Ω	½		BTS-1500	
R128	10Ω	2	4689		
R129	220KΩ	1	44592	BTA-220K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	HOFFMAN PART No.	IRC PART No.	
R130	220KΩ	1	44592	BTA-220K	
R131	2500Ω	10		1 3/4A-2500	
R132	2500Ω	10		1 3/4A-2500	
R133	220KΩ	1	44592	BTA-220K	
R134	220KΩ	1	44592	BTA-220K	
R135	3.9Ω	½			
R136	3.9Ω	½			
R137	2Meg	2			
R138	500Meg				
R139	150Ω	10	4730	1 3/4A-150	
R140	150Ω	10	4730	1 3/4A-150	
R141	150Ω	10	4730	1 3/4A-150	
R142	180KΩ	1	34507	BTA-180K	
R143	100KΩ	½	4571	BTS-100K	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T5	117VAC ②1.78A	780VCT .190ADC	5VAC ② 6A	6.3VAC ②7.3A	5031		P-3067 ① ②		R-36BC	

① Do not use low taps on high voltage secondary.
② Parallel 5 volt windings and use as Sec. 2.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA HOFFMAN PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T6	148Ωtap ②1Ω, 10.5Ω, 18Ω	2Ω SEC. 2 0Ω SEC. 3 0Ω	5033-2				D-26		Horiz. Output Trans.
T7	12Ω		5464	WC-5 ①	MWC-1② ③	TWL-1	WC-11① ②	212R1	Linearity Coil
T8	12Ω		5464	WC-5 ①	MWC-1② ③	TWL-1	WC-11① ②	212R1	Width Coil

① Connect to coded red and blue terminals .
② Enlarge mounting hole.
③ Do not use secondary.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M7	3AG S/B	3 Amp. 250V	9648		313003 (3AG 3A S/B)	342001	MDL3	HKP
M8	3AG P/T	3/10A. 250V.	9764		918.300		GJV 3/10	

DISASSEMBLY INSTRUCTIONS

MAIN CHASSIS

Remove 7 push on type control knobs from front panel.

Remove 13 wood screws. Remove rear cover.

Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.

Disconnect 4 speaker leads. (2 Speakers) , Interconnecting chassis cable, CRT socket.

Remove 2 wood screws . Remove wood strip holding main chassis.

Remove main chassis from cabinet.

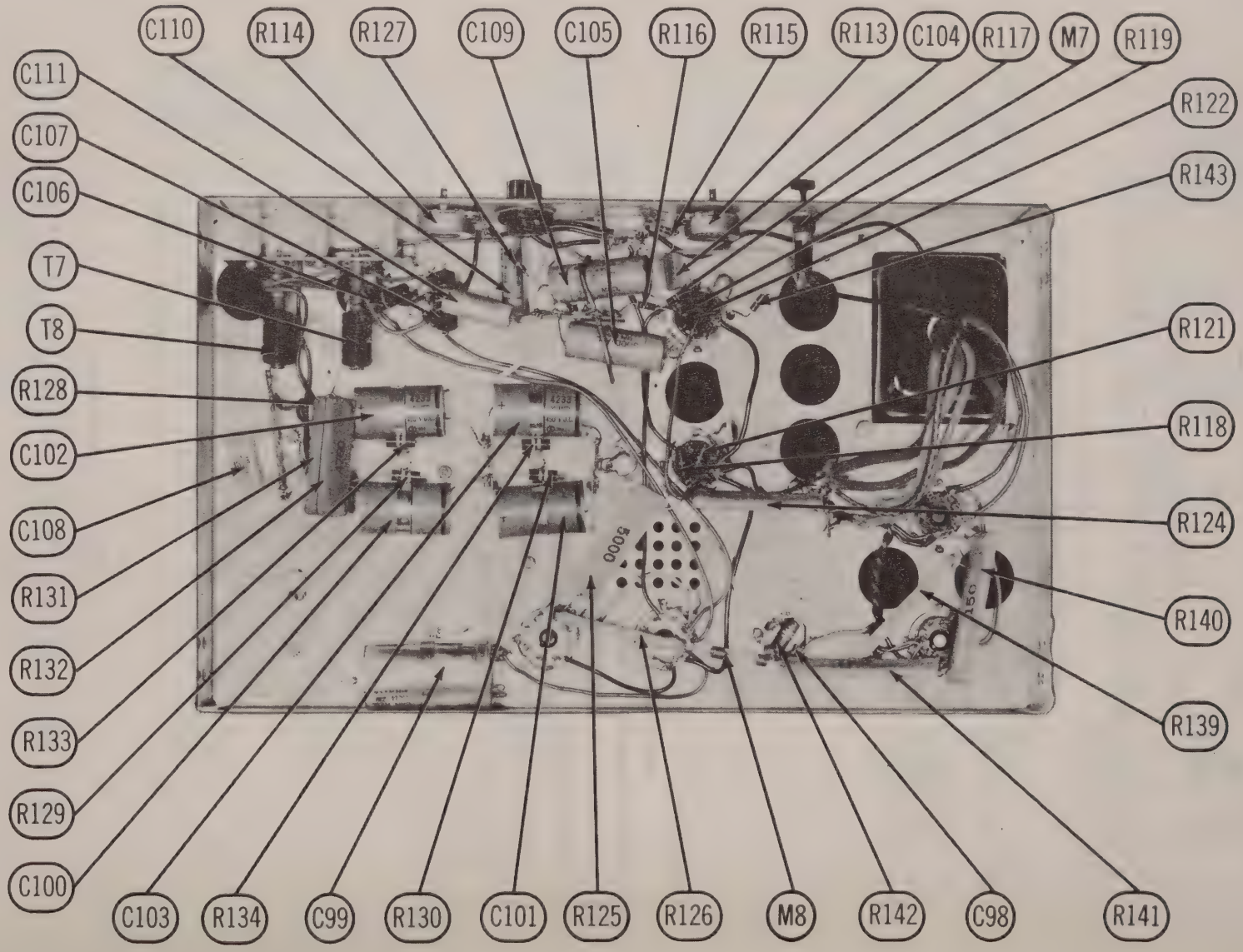
SWEEP CHASSIS

Disconnect yoke plug and HV lead (HV lead is clamped to yoke bracket.

Remove 4 chassis bolts (from top side) Remove sweep chassis.

SPEAKER

Remove 8 speaker screws. Remove 2 speakers.



SWEEP CHASSIS-BOTTOM VIEW

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. I.

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12, V13, V14 and V15. Check stages of V13, V14 and V15 using audio signal generator. Apply audio signal across R68.

If Satisfactory	If Unsatisfactory
Check audio IF and ratio detector alignment and components.	Check components associated with V13, V14 and V15 especially C72, C75, T4 and SP1.

BUZZ

Adjust ratio detector secondary (A13) for minimum buzz. If buzz is still objectionable, substitute V12 and readjust A12 and A13. Check C5 and C65. Check for loose solder points or poor connections.

DISTORTED

Check by substitution V10, V11, V12, V13, V14 and V15. Check stages of V13, V14 and V15 using audio signal generator and scope. Apply audio signal across R68. Connect scope across secondary of T4

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V13, V14 and V15 especially C72, C75, T4 and SP1.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check Fuse M8. Check by substitution V20, V23, V24, V25, V26, V27, V28, V29, and V30. Check waveform at W15.

If Satisfactory	If Unsatisfactory
Check R135, R136 C113, C114, R136, R126, R125, T6, T3A and other associated circuit components.	Check components associated with V20.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V20, V21, V23, V24, V25, V26, V27, V28, V29, and V30. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V20, V21, V23, V24, V25, V26, V27, V27, V28, V29 and V30. Check picture tube, R135, R136, C113, C114, R138, T6, T3A and other associated circuit components.

POWER

DEAD SET

Check fuses M1 and M7. Check all connector cables. Check AC interlock assembly.

SMALL AND / OR DIM RASTER

Check by substitution V29 and V30. Check Sweep chassis power supply components especially C98A, C98B and C99.

GENERAL

SOUND NO RASTER

Check fuses M7 and M8. Proceed as outlined under "Loss of High Voltage".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check components associated with these stages.

RASTER SOUND NO PICTURE

Substitute V8. Proceed as outlined under "Loss of Video".

TOTAL LOSS OF SYNC

Check by substitution V16 and V17. Check components associated with V16 and V17A.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENT S

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector and fine tuning knobs.

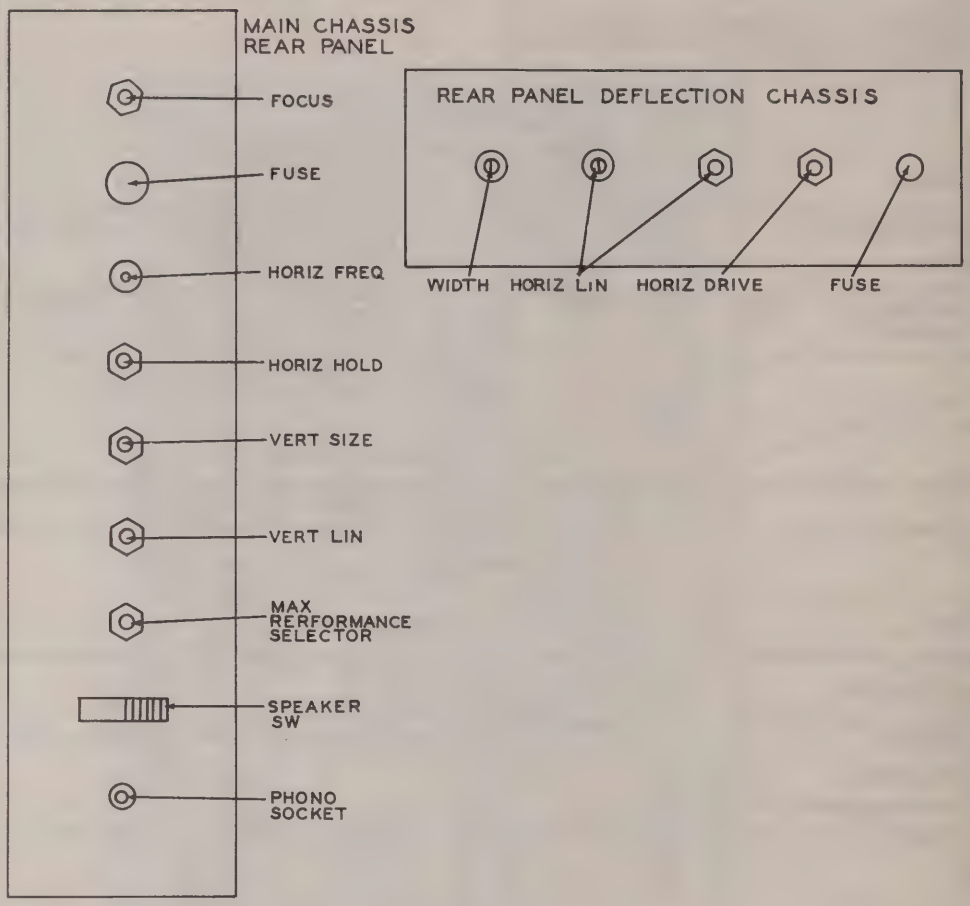
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove four metal plugs located at the top and bottom of safety glass door frame. Remove four bolts under plugs and open door which is hinged at the bottom.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - MAXIMUM PERFORMANCE SELECTOR ADJUSTMENT

Adjust this control for best picture quality on a strong TV station.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L30) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

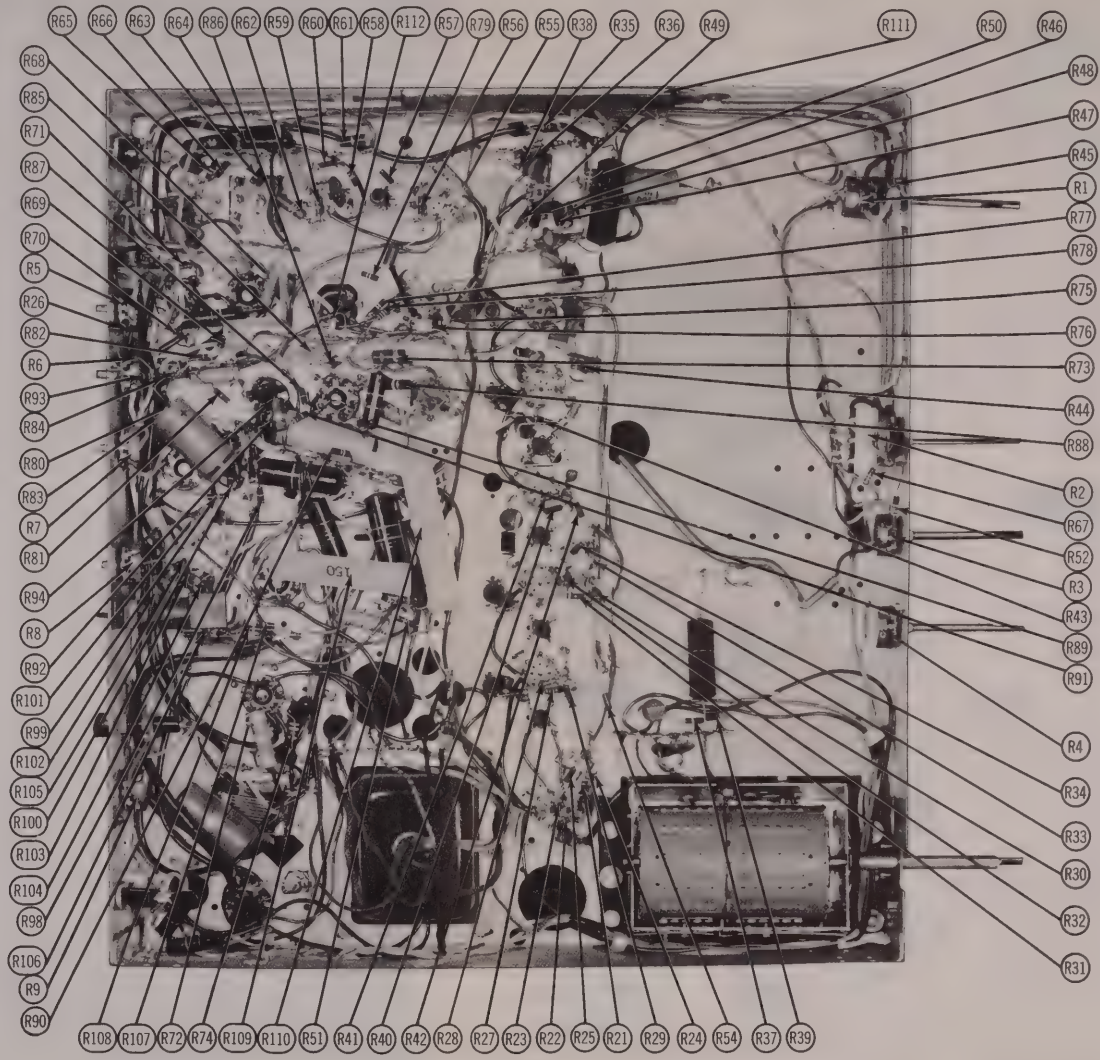
To eliminate Sound IF Detector Buzz, adjust the ratio detector secondary (L29) located on top of chassis. (See tube placement chart).

FUSES

Three fuses are used. One for LV power supply main chassis, one for LV power supply sweep chassis and one for horizontal sweep protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side and up and down until the picture is properly centered.



MAIN CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PHOTOFACT* Folder

RCA VICTOR
MODELS 21-D-346, U (Ch. KCS81E, D, RC1111A, RS141A)

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MODEL 21-D-346U

RCA VICTOR
MODELS 21-D-346, U (Ch. KCS81E, D, RC1111A, RS141A)

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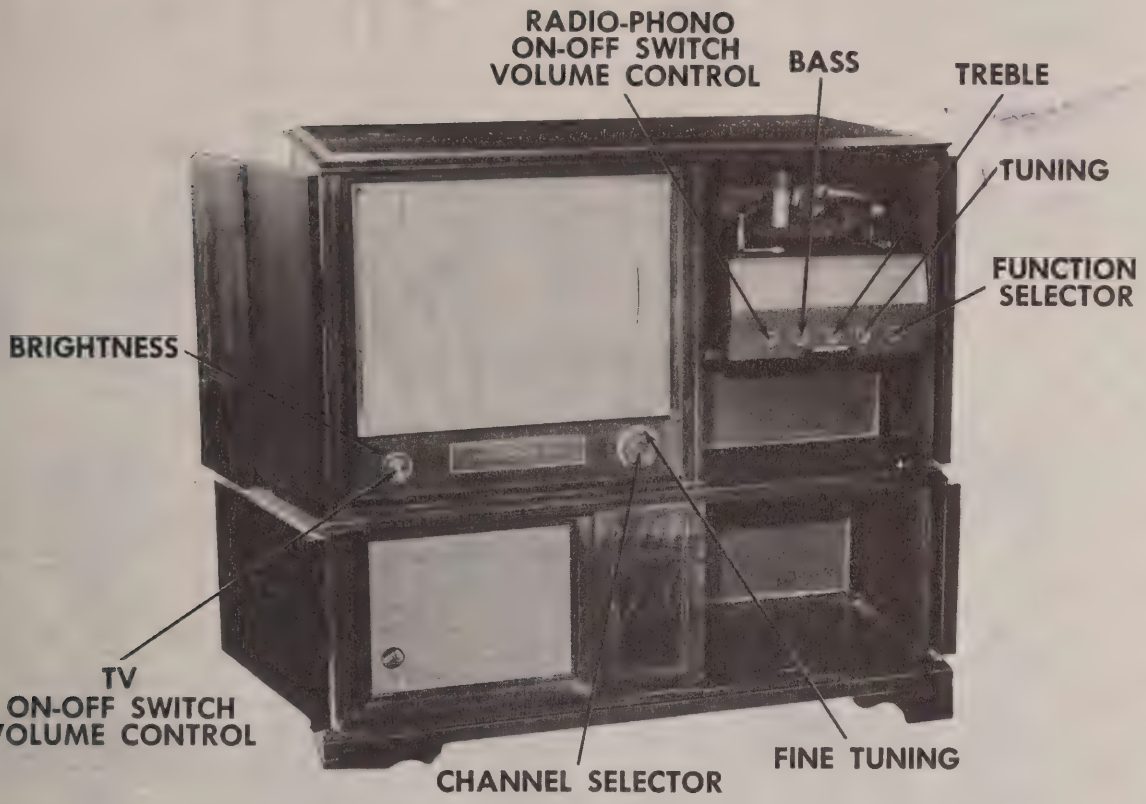

RCA VICTOR MODELS 21-D-346, U
(Ch. KCS81E, D, RC1111A, RS141A)

RCA VICTOR MODEL 21-D-346U

TRADE NAME	RCA Victor, Model 21-D-346, U (Ch. KCS81E, D, Radio Ch. RC1111A, Power Ch. RS141A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	TV-AM-FM-Phono Combination
TUBES	Twenty-Five (TV) Ten (Radio)
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 3.14 A. @ 117 V. AC (TV), .725A. @ 117V. AC (Radio)
TUNING RANGE	Channels 2 thru 13 VHF 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) FM Radio 88-108MC, FM IF 10.7MC, AM Radio 540-1600KC, AM IF 455KC

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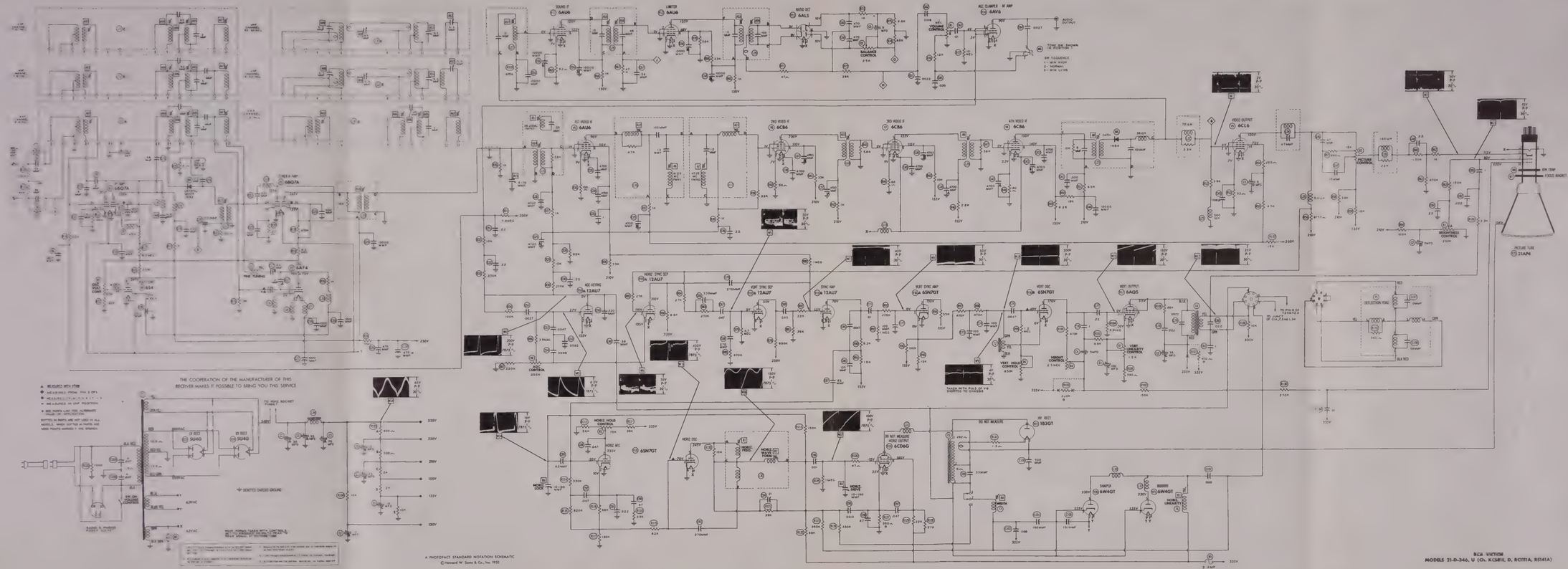
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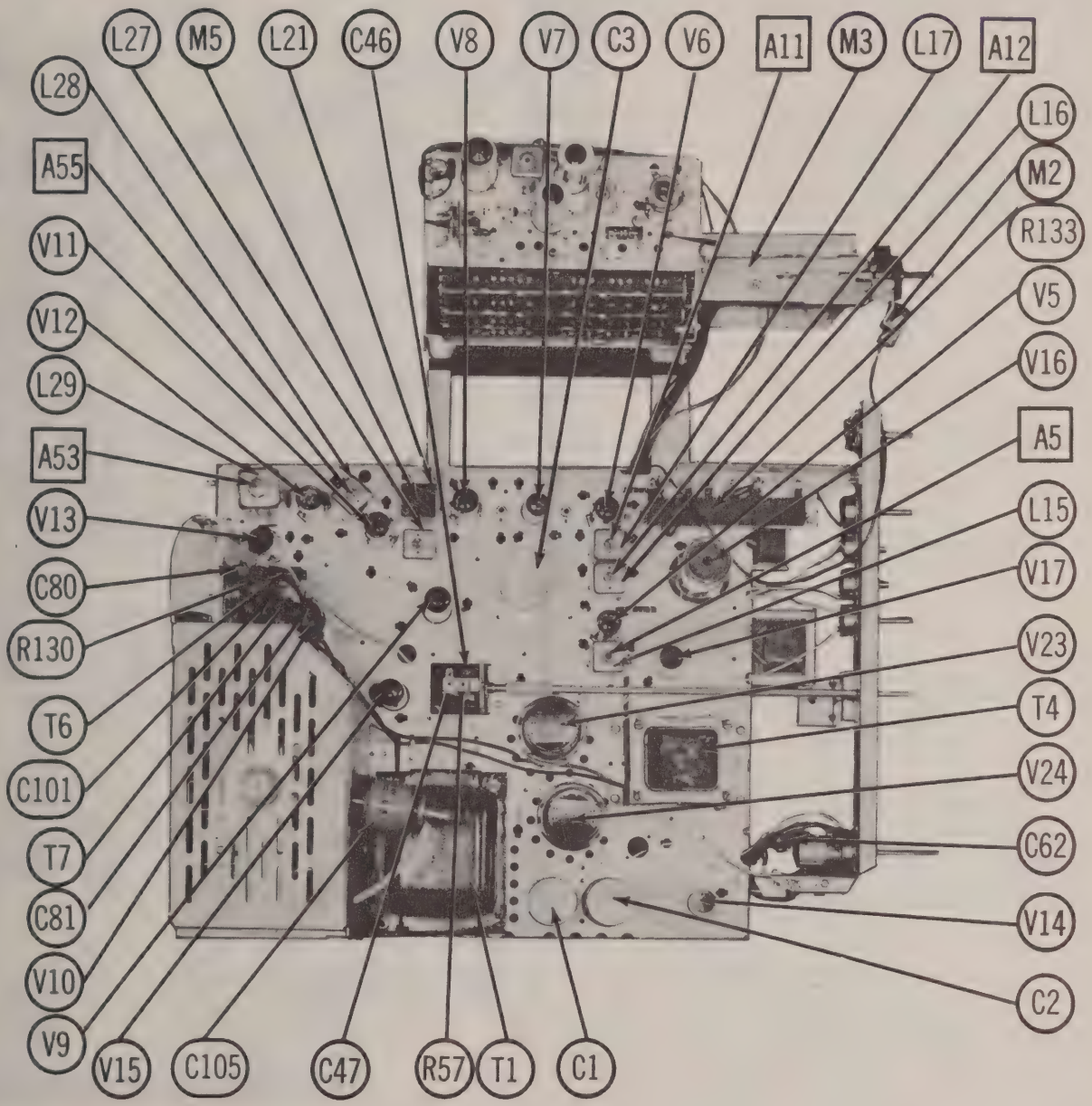
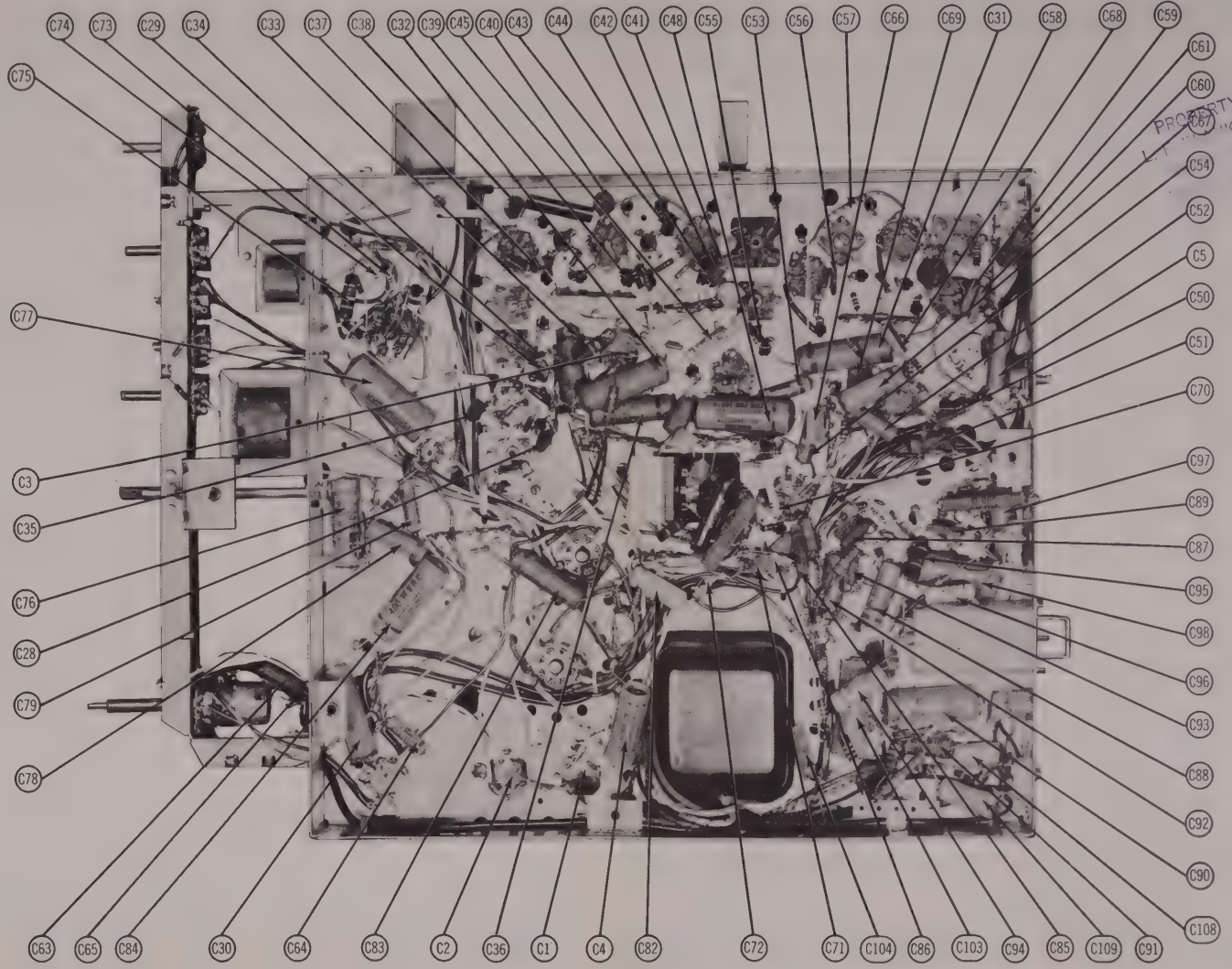


TV CHASSIS TOP VIEW



TV CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V18.

ANTENNA MATCHING UNIT ALIGNMENT (TUNER KRK22A)

The antenna matching unit is properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place. If a new antenna matching unit is installed the RF unit should be realigned.
Alignment should not be attemped without the proper alignment facilities. Disconnect the lead from the FM trap (adjustment A58) to the channel selector switch.
Use a short jumper to connect point (A) on the matching unit through a .001MFD capacitor to pin 1, grid, of socket V5.
Remove 6AU6, V5, from its socket.
The cover of the matching unit must be in place during alignment.
Connect the ends of a 100Ω potentiometer across a 7.5V battery capable of withstanding considerable current drain.
Connect the positive terminal to chassis and the potentiometer arm to the ungrounded side of C36. Set arm for a 5V. at C36.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

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	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Not Used.	45.75MC (400∿ Mod)	Any	Vert. amp to point (B) Low side to chassis.	A1	Set oscillator to maximum and adjust A1 for MINIMUM 400∿ response.
2.	"	"	"	41.25MC (400∿Mod)	"	"	A2	Adjust for MINIMUM 400∿ response on scope.
3.	"	"	50MC (10MC Swp)	50MC 52MC 53MC	"	Vert. amp thru detector probe (Fig. 1) to point (A). Low side to chassis.	A3, A4	Remove the .001 capacitor from point (A). and connect a 300Ω carbon resistor from point (A). to chassis using short leads. Adjust A3 & A4 to obtain response curve as in Fig. 2. Repeat steps 1, 2 and 3 until no further improvement is made. Remove the 300Ω resistor and the detector probe. Restore the connection between the FM trap and the channel switch. Replace V5 in its socket.

VIDEO IF TRAP ALIGNMENT

Connect bias supply as under Antenna Matching Unit Alignment and set for -1V at point of application.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	Across terminals A & B of L15.	39.25MC	Any	DC probe to point (B). Common to chassis.	A5	Adjust for MINIMUM deflection.
5.	"	"	41.25MC	"	"	A6	"
6.	"	"	47.25MC	"	"	A7	"

VIDEO IF ALIGNMENT (SETS USING UHF-VHF TUNER KRK12)

Leave bias supply set to -1V.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	Across terminals A & B of L15	Not used	43.7MC	Any	Use VTVM. DC probe to point (B). Common to chassis.	A8	Adjust for maximum deflection. Attenuate generator to maintain 1 Volt at VTVM.
8.	"	"	"	45.5MC	"	"	A9	"
9.	"	"	"	41.8MC	"	"	A10	"
10.	.001MFD Ceramic Capacitor	High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	43MC (10MC Swp)	41.25MC 42.0MC 45.0MC 45.75MC 46.5MC 47.25MC		Vert. Amp. of scope to point (B). Low side to chassis.	A11, A12	Shunt R43, R47 and terminals A & F of L21 with 330Ω carbon resistors. Adjust for maximum gain and response similar to Fig. 3. Attenuate generator to maintain .5V peak to peak response on scope.
11.	.0015MFD Ceramic Capacitor	High side to junction of 1N82 crystal and IF grid transformer L12. Low side to tuner case. Use very short shielded leads. Loosely couple the marker generator to the scope detector probe.	"	42.5MC 45.75MC 47.25MC	5	Vert. Amp. thru detector (Fig.1) to pin 5 (plate) of V5. Low side to chassis.	A14, A15 A16, A17	Connect 180Ω carbon resistor from terminal B of L16 to the junction of R37 and C29B. Preset A15 to minimum capacity. Adjust A14 and A16 for maximum gain at 43.5MC with 45.75MC at 70% of maximum response. Adjust A15 until 42.5MC is at 70% response. Adjust A17 for maximum gain. If necessary readjust A14 and A16 for proper response as in Fig. 5. Disconnect the 180Ω and the three 330Ω resistors.

VIDEO IF ALIGNMENT (SETS USING VHF TUNER KRK22A)

Leave bias supply set to -1V.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	Across terminals A & B of L15.	Not Used.	43.7MC	Any	Use VTVM. DC probe to point (B). Common to chassis.	A8	Adjust for maximum deflection. Attenuate generator to maintain 1 Volt at VTVM.
8.	"	"	"	45.5MC	"	"	A9	"
9.	"	"	"	41.8MC	"	"	A10	"
10.	.001MFD Ceramic Capacitor	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	43MC (10MC Swp)	41.25MC 42.0MC 45.0MC 45.75MC 46.5MC 47.25MC	"	Vert. amp of scope to point (B). Low side to chassis.	A11, A12	Shunt R43, R47 and terminals A & F of L21 with 330Ω carbon resistors. Adjust for maximum gain and response similar to Fig. 3. Attenuate generator to maintain .5 Volt peak to peak response on scope.
11.	.0015MFD Ceramic Capacitor	High side to point (C). Low side to tuner chassis Use very short leads.	"	41.25MC 41.9MC 44.5MC 45.75MC	5	Vert. amp thru detector (Fig. 1) to pin 5 (Plate) of V5. Low side to chassis.	A13, A14, A15	Connect 180Ω carbon resistor from terminal B of L16 to the ujunction of R37 and C29B. Preset A15 to minimum capacity. Adjust A13 and A14 for maximum gain and response similar to Fig. 4. Adjust A15 until 41.25MC is at 85% response with respect to low frequency shoulder of 41.9MC. Disconnect the 180Ω and the three 330Ω resistors.

SWEEP ALIGNMENT OF VIDEO IF

Connect bias supply as under antenna matching unit alignment and set for -6 V. at point of application.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13. .0015MFD Ceramic Capacitor	High side to point (C) for KRK22A Tuner or to junction of IN82 crystal and L12 for KRK12 Tuner. Low side to tuner chassis. Use very short leads.	43MC (10MC Swp)	42.25MC 42.5MC 45.0MC 45.75MC 46.5MC	Any	Vert. Amp. to point (D). Low side to chassis.		Couple marker generator loosely to pin 1 (grid) of 6AU6 (Y3). Retouch A8 and A9 for response as in Fig. 8. Do not retouch A10 unless absolutely necessary because of its effect on the level of the sound carrier.

KRK22A TUNER ALIGNMENT

An RF unit which is operative and requires only minor touch-up adjustments requires no presetting of adjustments.
Where complete alignment is necessary preset A18 all the way out. Set channel 7 to 13 oscillator slugs one turn from maximum clockwise.
Set IF grid transformer slug (A17) all the way out.
Disconnect the link from terminals A and B of L15 and terminate the link with a 39Ω carbon resistor.
A18 is adjusted with zero bias. To insure a constant bias short AGC tuner terminal to ground.
Connect the potentiometer arm of the bias supply to the AGC terminal on the tuner and the positive lead of the supply to the tuner case.
Adjust for a -3.0V at the point of application. Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
The oscillator injection voltage measured at point (B) with a VTVM should be maintained between 2 volts and 5.5V.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13. .0015MFD	High side to point (A). Low side to chassis.	Not used	42MC (400~Mod)	2	Vert. Amp. to point (D). Low side to chassis.	A18	Adjust for minimum 400~ indication on oscilloscope.
14.	RF input of heterodyne frequency meter to end of insulated wire inserted in hole in tuner provided for adjustment of A21.	"	Set Freq. meter to 227MC	8	Not used	A19, A20	Set fine tuning control fully clockwise. Adjust A20 for audible beat on frequency meter. Turn A19 clockwise until a change in beat note occurs and continue for one full turn in same clockwise direction. Return fine tuning control to its center position.
15. Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead. Attenuate signal generator for low signal input.	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (D). Low side to chassis.	A21, A22 A23, A24	Set A13 to maximum counter clockwise rotation. Adjust A21, A22, A23 and A24 for response similar to Fig. 7.
16.	Turn off all generators, connect VTVM to point (B) and adjust A26 for -3V.						
17.	Repeat Step 15.						
18.	Connect frequency meter as in Step 14.	Not used	Freq. meter to 257MC	13	Not used	A26	Adjust for audible beat on frequency meter. SLIGHTLY overshoot the adjustments a little more in the same direction from the original setting. Then adjust A19 to again obtain audible beat.
19.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (D). Low side to chassis.	A27 A28	Check for response similar to Fig.7. Check the oscillator injection voltage (-2 to 5.5V as in step 15. If A26 required adjustment recheck channel 13 response. Switch to channel 8. Readjust A21, A22, A23 and A24 as necessary. If A21 was readjusted check oscillator injection voltage on channel 13 as in Step 16.
20.		Connect frequency meter as in Step 14.	Not used	Set Freq. meter to 227MC	8	Not used		Check for audible beat on frequency meter. If necessary adjust A18, overshoot the adjustment and correct by adjusting A25.
21.		"	"	Set Freq. meter to 129MC	6	"	L39	Set fine tuning control to its mid-range position. Adjust for audible beat on frequency meter.
22.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (D). Low side to chassis.	A30, A31, A32	Check for response similar to Fig. 7. If necessary adjust A30, A31, and A32. Check oscillator injection voltage as in Step.16. If A26 required adjustment switch receiver and generator to channel 8, Readjust A21 for proper curve shape. Recheck A19 and A20 for correct oscillator frequency.
23.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (D). Low side to chassis.		Check for response as in Fig. 7, and for proper oscillator injection voltage at point (D). If markers fall below 80% on the response curve retouch A30, A31 and A32 when necessary.
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
24.	"	"	215MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for proper response as in Fig. 7. Retouch A21, A22 and A23 as necessary.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

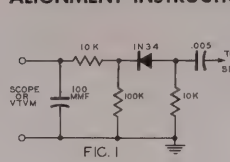


FIG. 1

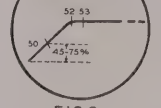


FIG. 2

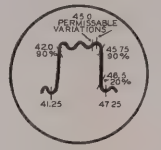


FIG. 3

FIG. 4

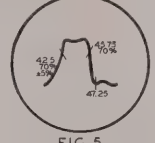


FIG. 5

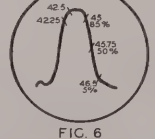


FIG. 6

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
25.	Connect frequency meter as in Step 14.	Not used	Set. Freq. meter to 257MC	13	Not used		Adjust A26 for audible beat on frequency meter.
26.	"	"	251MC	12	"	A33	Adjust for audible beat on frequency meter.
			245MC	11		A34	
			239MC	10		A35	
			233MC	9		A36	
			227MC	8		A37	
			221MC	7		A38	
			129MC	6		A29	
			123MC	5		A39	
			113MC	4		A40	
			107MC	3		A41	
			101MC	2		A42	

KRK12 TUNER VHF ALIGNMENT

It is necessary to meter the non-oscillating plate current of the 6S4 voltage control tube. This can be accomplished by use of an adaptor or similar arrangement. The circuit diagram for the adaptor is shown in Fig. 8.
Remove the 6S4 from its socket. Plug the 6S4 into the adaptor.
Connect the 0-50MA meter to adaptor and turn the switch on.
Remove the tuner cover shield. Set channel selector midway between channels to disable the local oscillator. Some tubes may oscillate even with the tuned circuits disengaged. As a check, short circuit the spring contacts 12 and 13 nearest the tuner front, with a finger. (Contacts are at zero DC potential). If plate current rises keep finger on contacts while adjusting the oscillator voltage control for a 28MA indication on the meter.
Replace tuner cover shield.
The oscilloscope used should have sensitivity of 1 millivolt per inch. If sensitivity is less, a suitable pre-amplifier may be used with the scope.
A heterodyne frequency meter is used while making VHF oscillator adjustments.
To find oscillator frequency for any VHF or UHF channel add 45.75MC to the video carrier frequency for that channel as listed in the frequency chart.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27. Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Set sweep to channel being aligned. See channel freq. chart	Set alternately to video and sound carrier freq. of channel being aligned. See chart.	2 thru 13	Vert. Amp. to point (D). Low side to chassis.	A43, A44, A45, A46 (See Remarks)	Ground AGC lines at the tuner terminal board. Turn off the adaptor switch removing the plate voltage from the oscillator. Adjust for response similar to Fig. 9. Each channel strip adjustment for an individual channel strip has a corresponding adjustment on all other VHF channel strips. Since these adjustments are identical in position and function they are indicated by the same "A" number in the interests of simplification. Adjustments for A43, A44 and A45 for each channel strip are accessible thru holes in top of tuner as the channel switch is turned to each channel. Adjustment of A46 refers to coupling capacitor whose positioning affects the band width of the response curve.
28.	Remove the ground clip placed on the AGC line in above step. Turn the AGC control fully clockwise. Connect the potentiometer arm of the bias supply to the tuner AGC terminal. Connect the positive lead to the tuner case. Adjust for -3.5 volts at AGC terminal. Connect the potentiometer arm of a second bias supply to the ungrounded side of C36. Connect the positive lead to chassis. Adjust for -5 volts at potentiometer arm. Turn the 6S4 adaptor switch on to apply plate voltage to oscillator. Connection of the heterodyne frequency meter for oscillator adjustment is made as follows: Insert the end of an insulated piece of wire into either of two holes next to the oscillator tube of the right top corner of the tuner. Use care so that the wire does not touch any tuned circuits. Connect the other end of the wire to the RF input of frequency meter.						
29.		Connect frequency meter as above.	Not used	257MC	13	Not used	A47	Adjust for audible beat on frequency meter.
30.	Two 130Ω	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.75MC 215.75MC	"	Vert. Amp. to point (D). Low side to chassis.		Adjust A17 for maximum gain on scope. Adjust A45 for maximum gain and flat topped curve. Recheck A17 for maximum gain at center of band.
31.		Connect frequency meter as in step 28.	Not used	Freq. meter to oscillator frequency channels 12 thru 2. (See chart)	12 thru 2	Not used	A47 A45	Adjust A47 on each channel for audible beat on freq. meter. Connect scope as in step 30, set sweep and marker to proper frequencies for each channel and adjust A45 if necessary for maximum gain and proper response curve.
32.	Direct	High side to point (F). Low side to chassis.	Not used	43.5MC (400~Mod)	Any	Vert. Amp. to point (D). Low side to chassis.	A48	Adjust for MINIMUM 400~ indication on scope.

KRK12 TUNER UHF ALIGNMENT

Alignment of the UHF portion of the tuner should not be attempted unless the following test equipment is available, in addition to the usual VHF test equipment. A UHF sweep generator covering the range of 470MC to 890MC. A marker generator of crystal accuracy covering the same frequency range.
Leave 6S4 adaptor connected as under KRK22A tuner VHF alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
33. 10DB Attenuator Pad	Sweep generator thru attenuator to antenna terminals. Couple UHF marker generator loosely to antenna terminals.	Set sweep to cover channel being aligned. See chart.	Set alternately to video and sound carrier frequency of channel being aligned. See chart.	14 thru 83	Vert. amp to point (D) Low side to chassis.	A49, A50 A51	Turn off adaptor switch removing plate voltage from oscillator. Ground the AGC line at the tuner terminal board. Adjust for maximum gain, symmetrical response curve centered about the pass band. See Fig. 10 for acceptable variations.

TV ALIGNMENT INSTRUCTIONS (cont)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
34.	Connect both bias supplies and adjust as under tuner VHF alignment. Remove the ground from the AGC line. Turn the adaptor switch on to apply plate voltage to the oscillator. Connect the VHF signal generator to point (E) using very short leads. Set generator to 45. 75MC for the remainder of tuner alignment.							
35.	10DB Attenuator Pad	Sweep generator thru attenuator to antenna terminals. Connect UHF marker generator to point (E) and tuner chassis.	Set sweep to cover channel geing aligned. See chart.	Set alternately to video and sound carrier frequency of channel being alignedSee chart.	14 thru 83	Vert. amp to point (B) Low side to chassis.	A52	Adjust A52 for channel strip being aligned until 45. 75MC and video carrier marker coincide on response curve. Adjust A51 on channel strip being aligned for maximum gain with proper wave shape. Connect VTVM to point (F) with common to chassis. Set oscillator injection adjustment for reading on VTVM, between .1Volt and 3 Volts on all channel strips.

SOUND IF ALIGNMENT

Turn volume control to maximum.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
36.	.001MFD	High side to pin 1 (grid) of 6AU6 (V12). Low side to chassis.	Not used.	4. 5MC (400~Mod)	Any	Use VTVM. DC probe to point (G) Common to chassis.	A53	Adjust for maximum deflection. Adjuat generator output to maintain 10 Volts at VTVM.
37.	"	"	"	"	"	Connect scope across voice coil. VTVM. DC probe to point (H) Common to chassis.	A54	Adjust A54 for zero reading on VTVM. A positive or negative reading will be obtained on either side of the correct setting. Then adjust A54 to the nearest MINIMUM 400~ indication on scope.
38.	Repeat adjustments of A53 for maximum deflection and A54 for minimum audio output with final adjustment at an input level to produce 10 Volts at VTVM at point (G)							
39.	Check voltage at point (H) If in excess of ±1. 5Volts adjust the ratio detector balance control, R3, for zero DC. Readjust A54 for minimum audio output. Repeat adjustments of R3 and A54 until voltage at point (H) is less than ±1. 5Volts when A54 is set for minimum audio output.							
40.	Repeat steps 37 and 39.							
41.	.001MFD	High side to pin 1 (grid) of 6AU6 (V11). Low side to chassis.	4. 5MC (1MC Swp)	4. 5MC	Any	Vert. amp thru 10KΩ to point (J) Low side to chassis.	A55, A56	Adjust for curve of maximum amplitude and symmetry as in Fig. 11. Attenuate generator to maintain 2 Volts peak to peak response.
42.	1000Ω Carbon Resistors	High side to terminal C of L27. Low side to chassis.	Not Used.	4. 5MC	"	Use VTVM. DC probe thru detector (Fig. 1) to pin 6 (plate) of 6CL6 (V9). Common to chassis.	A57	Short pin 1 of V8 to chassis. Adjust for MINIMUM deflection. Remove short from pin 1 of V8.

FM TRAP ADJUSTMENT

Tune in a TV station on which FM interference is noted and adjust A58 to minimize the interference. On some receivers A58 will tune into channel 6 or 5. Care must be taken to avoid this possibility as reduced sensitivity on these channels will result.

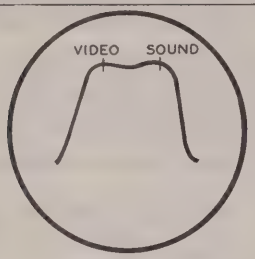


FIG. 7

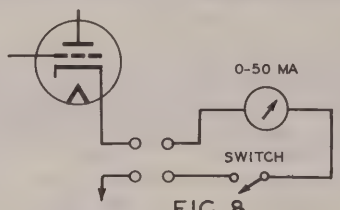


FIG. 8

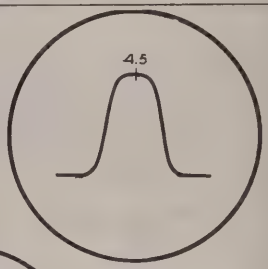


FIG. 11

FIG. 10

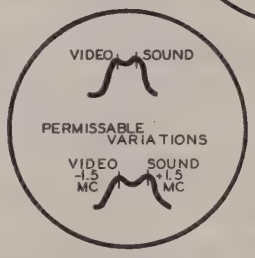
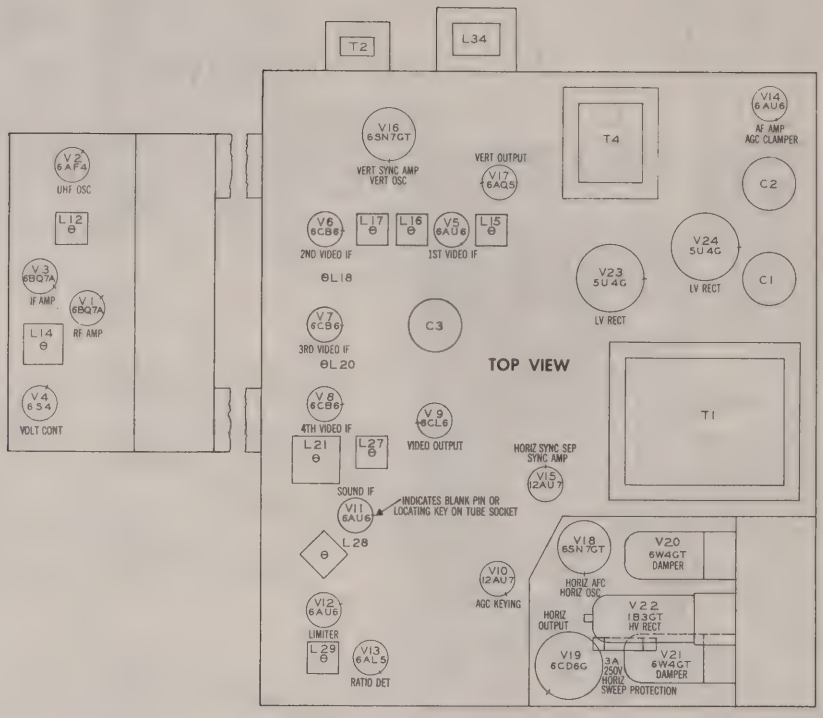


FIG. 9

TELEVISION CHANNEL FREQUENCIES

Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier
2	54-60	55.25	59.75	23	524-530	525.25	529.75	44	650-656	651.25	655.75	64	770-776	771.25	775.75
3	60-66	61.25	65.75	24	530-536	531.25	535.75	45	656-662	657.25	661.75	65	776-782	777.25	781.75
4	66-72	67.25	71.75	25	536-542	537.25	541.75	46	662-668	663.25	667.75	66	782-788	783.25	787.75
5	76-82	77.25	81.75	26	542-548	543.25	547.75	47	668-674	669.25	673.75	67	788-794	789.25	793.75
6	82-88	83.25	87.75	27	548-554	549.25	553.75	48	674-680	675.25	679.75	68	794-800	795.25	799.75
7	174-180	175.25	179.75	28	554-560	555.25	559.75	49	680-686	681.25	685.75	69	800-806	801.25	805.75
8	180-186	181.25	185.75	29	560-566	561.25	565.75	50	686-692	687.25	691.75	70	806-812	807.25	811.75
9	186-192	187.25	191.75	30	566-572	567.25	571.75	51	692-698	693.25	697.75	71	812-818	813.25	817.75
10	192-198	193.25	197.75	31	572-578	573.25	577.75	52	698-704	699.25	703.75	72	818-824	819.25	823.75
11	198-204	199.25	203.75	32	578-584	579.25	583.75	53	704-710	705.25	709.75	73	824-830	825.25	829.75
12	204-210	205.25	209.75	33	584-590	585.25	589.75	54	710-716	711.25	715.75	74	830-836	831.25	835.75
13	210-216	211.25	215.75	34	590-596	591.25	595.75	55	716-722	717.25	721.75	75	836-842	837.25	841.75
14	470-476	471.25	475.75	35	596-602	597.25	601.75	56	722-728	723.25	727.75	76	842-848	843.25	847.75
15	476-482	477.25	481.75	36	602-608	603.25	607.75	57	728-734	729.25	733.75	77	848-854	849.25	853.75
16	482-488	483.25	487.75	37	608-614	609.25	613.75	58	734-740	735.25	739.75	78	854-860	855.25	859.75
17	488-494	489.25	493.75	38	614-620	615.25	619.75	59	740-746	741.25	745.75	79	860-866	861.25	865.75
18	494-500	495.25	499.75	39	620-626	621.25	625.75	60	746-752	747.25	751.75	80	866-872	867.25	871.75
19	500-506	501.25	505.75	40	626-632	627.25	631.75	61	752-758	753.25	757.75	81	872-878	873.25	877.75
20	506-512	507.25	511.75	41	632-638	633.25	637.75	62	758-764	759.25	763.75	82	878-884	879.25	883.75
21	512-518	513.25	517.75	42	638-644	639.25	643.75	63	764-770	765.25	769.75	83	884-890	885.25	889.75
22	518-524	519.25	523.75	43	644-650	645.25	649.75								

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V23, V24**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6, V7, V8**
No pic, no sound, has snow - **V1, V2, V3, V4**
No pic, has sound, has raster - **V9, V25**
Has pic, no sound - **V11, V12, V13, V14**
Overloaded picture - **V10, V14**

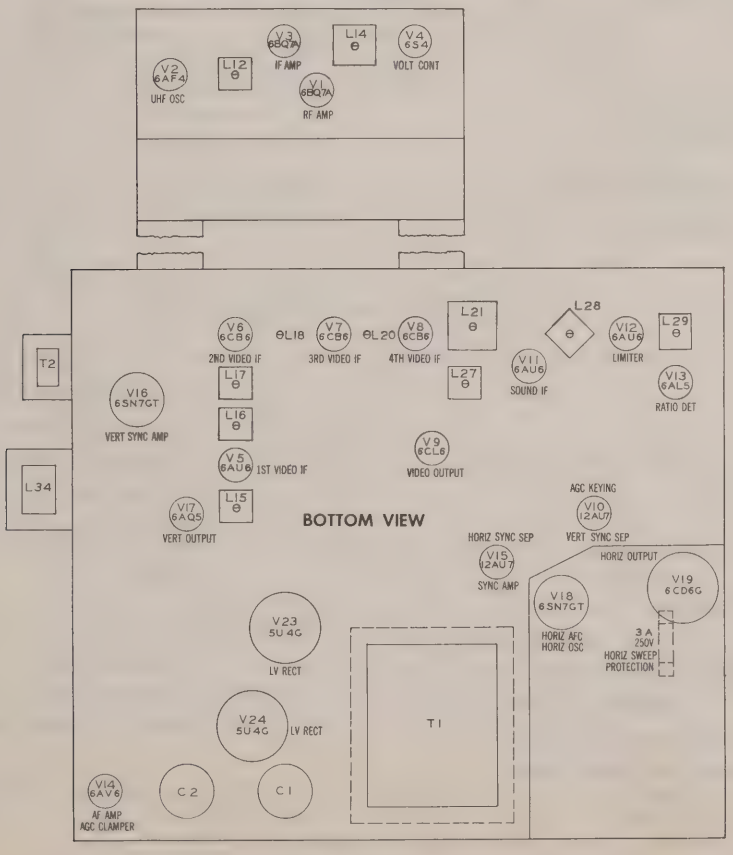
SYNC FAILURE
No vert. sync - **V15, V16, V17**
No horiz. sync - **V15, V18**
No vert. or horiz. sync - **V10, V15**

SWEEP FAILURE
No raster, has sound - **V18, V19, V20, V21, V22, V25, Fuse (M1)**
No vertical deflection - **V16, V17**
Poor vert. linearity or foldover - **V16, V17**
Poor horiz. linearity or foldover - **V18, V19, V20, V21**
Narrow picture - **V18, V19, V20, V21, V22, V23, V24**
Vert. off freq. - **V15, V16, V17**
Horiz. off freq. - **V15, V18**

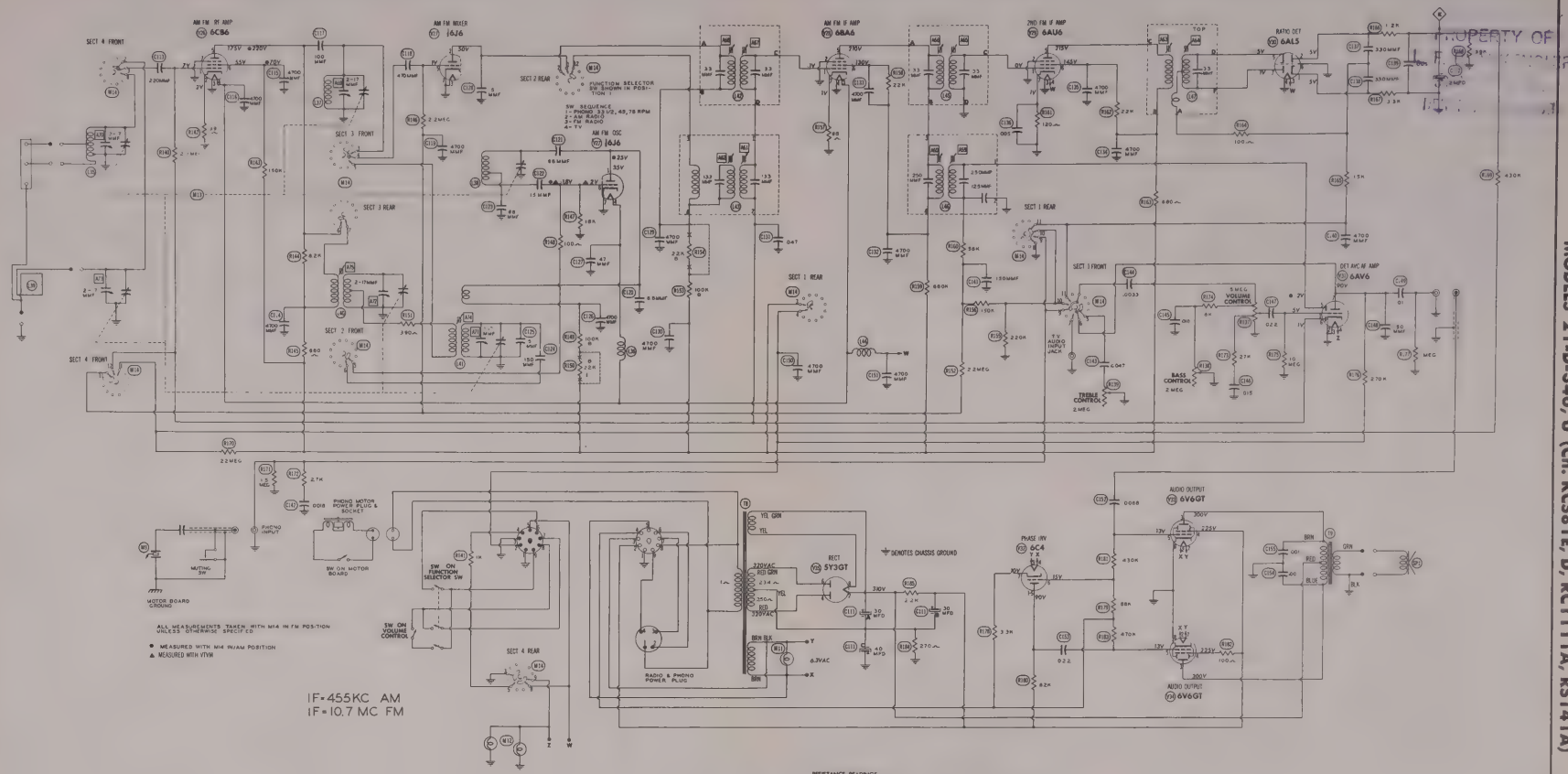
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	† 1.8KΩ	8.3 Meg	8.8 Meg	0Ω	.1Ω	8.8 Meg	560KΩ	120Ω	0Ω
V 2	6AF4	‡1KΩ	10K Ω	.1Ω	0Ω	0Ω	10KΩ	‡ 1KΩ		
V 3	6BQ7A	8.8 Meg	.1Ω	120Ω	.1Ω	0Ω	†800Ω	8.3 Meg	8.8 Meg	0Ω
V 4	6S4	INF	INF	110 KΩ	.1Ω	0Ω	110KΩ	INF	INF	†800Ω
V 5	6AU6	80KΩ	0Ω	0Ω	.1Ω	†17KΩ	†34KΩ	100Ω		
V 6	6CB6	80KΩ	56Ω	0Ω	.1Ω	†2.2KΩ	†34KΩ	0Ω		
V 7	6CB6	.3Ω	68Ω	.1Ω	0Ω	†5.4KΩ	†13KΩ	0Ω		
V 8	6CB6	.3Ω	180Ω	.1Ω	0Ω	†8KΩ	†7.6KΩ	0Ω		
V 9	6CL6	33Ω	3.9KΩ	†20KΩ	0Ω	.1Ω	†5.8KΩ	0Ω	†20KΩ	3.9KΩ
V 10	12AU7	320KΩ	4.6 Meg	†3.2KΩ	.1Ω	.1Ω	†680KΩ	4.7 Meg	0Ω	0Ω
V 11	6AU6	470KΩ	0Ω	0Ω	.1Ω	†17KΩ	†17KΩ	82Ω		
V 12	6AU6	47KΩ	0Ω	0Ω	.1Ω	†17KΩ	†28KΩ	0Ω		
V 13	6AL5	7.8KΩ	7.8KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 14	6AV6	10 Meg	0Ω	0Ω	.1Ω	540KΩ	540KΩ	INF		
V 15	12AU7	†6.8KΩ	†33KΩ	420KΩ	.1Ω	.1Ω	†13KΩ	60KΩ	0Ω	0Ω
V 16	6SN7GT	1.2 Meg	†37KΩ	12KΩ	1.5 Meg	■1.3 Meg	130Ω	0Ω	.1Ω	
V 17	6AQ5	3.3 Meg	720Ω	0Ω	.1Ω	†660Ω	†660Ω	3.3 Meg		
V 18	6SN7GT	1.3 Meg	†32KΩ	250KΩ	260KΩ	†68KΩ	0Ω	0Ω	.1Ω	
V 19	6CD6G	INF	.1Ω	200Ω	INF	1 Meg	200Ω	0Ω	†12KΩ	TOP CAP ■11Ω
V 20	6W4GT	INF	■0Ω	450KΩ	INF	†54Ω	INF	INF	INF	
V 21	6W4GT	INF	INF	450KΩ	INF	†54Ω	INF	INF	INF	
V 22	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ■293Ω
V 23	5U4G	INF	9.3KΩ	INF	12Ω	INF	13Ω	INF	9.3KΩ	
V 24	5U4G	INF	9.3KΩ	INF	13Ω	INF	12Ω	INF	9.3KΩ	
V 25	21AP4	0Ω	190KΩ	Pin 10 ■270KΩ	Pin 11 †120KΩ	Pin12 .1Ω				

† MEASURED FROM PIN 8 of V24.
‡ MEASURED FROM PIN 2 of V4.
■ MEASURED FROM PIN 3 of V21.



TUBE PLACEMENT CHART



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V26	6CB6	2.7MEG ±4.7MEG	39Ω	0Ω	.1Ω	†11KΩ †2.8KΩ	†150KΩ	0Ω	
V27	6J8	†124KΩ 500KΩ	†124KΩ	0Ω	.1Ω	5 Meg	18KΩ	0Ω	
V28	6BA6	+2.5Meg	0Ω	.1Ω	0Ω	†2.9KΩ	†25KΩ	68Ω	
V29	6AU6	.4Ω	0Ω	0Ω	.1Ω	†2.9KΩ	†25KΩ	120Ω	
V30	6AL5	3.3KΩ	40KΩ	.1Ω	0Ω	INF	0Ω	INF	
V31	6AV6	10Meg	0Ω	0Ω	.1Ω	100KΩ ‡430KΩ	500KΩ +2.5Meg	†270Ω	
V32	6C4	†85KΩ	INF	0Ω	.1Ω	†85KΩ	58KΩ	3.6KΩ	
V33	5V3GT	0Ω	.1Ω	†280Ω	†2.2KΩ	500KΩ	270Ω	0Ω	0Ω
V34	6V6GT	0Ω	.1Ω	†350Ω	2.3KΩ	470KΩ	270Ω	0Ω	0Ω
V35	5Y3GT	INF	1 Meg	INF	234Ω	INF	250Ω	INF	1 Meg

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.
• MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 2 OF V34.

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RCA VICTOR
MODELS 21-D-346, U (Ch. KCS81E, D, RC1111A, RS141A)

RADIO SCHEMATIC

RADIO ALIGNMENT INSTRUCTIONS

Turn the tuning gang fully closed and set the pointer to the last calibration point at the extreme left end of the dial.
Turn the tone control for maximum highs and maximum lows.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
When adjusting IF cores, start with cores all the way out. The first peak obtained will be the correct one.

AM IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
43.	.01MFD	High side to pin 1 (grid) of 6BA6 (V28). Low side to chassis.	455KC (400~Mod)	AM	Low frequency end of dial.	Across voice coil.	A59, A60	Adjust for maximum output.
44.	"	High side to stator of AM RF section of tuning gang. Low side to chassis.	"	"	"	"	A61, A62	"

FM ALIGNMENT

Top shield of unit must be on and bottom shield off.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
45.	.01MFD	High side to pin 1 (grid) of 6AU6 (V29) Low side to chassis.	10.7MC (30%AM)	FM	Quiet Point	DC probe to point K Common to chassis.	A63, A64	Connect output meter across voice coil. Adjust A62 for maximum deflection on VTVM. Adjust A63 for MINIMUM audio output. Repeat entire step making final adjustment with generator set to give -4Volts on VTVM.
46.	"	High side to pin 1 (grid) of V28. Low side to chassis.	10.7MC	"	88MC	"	A65, A66	Adjust for maximum deflection.
47.	"	High side to stator FM RF section of tuning gang. Low side to chassis.	"	"	"	"	A67, A68	"
48.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	90MC (22.5KC Swp)	"	90MC	Not used.	L38	Connect output meter across voice coil. Compress or expand L38 for maximum deflection.
49.	"	"	106MC (22.5KC Swp)	"	Tune to 106MC signal.	DC probe to point K Common to chassis.	A69, A70	Adjust for maximum deflection.
50.	"	"	90MC (22.5KC Swp)	"	Tune to 90MC signal.	"	L35, L36	Compress or expand coils for maximum deflection.
51.	Repeat steps 48, 49 and 50 as necessary.							

AM RF ALIGNMENT

RF shields should be in place during steps 52 and 53.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
52.		Loop	1620KC	AM	Tuning gang fully open	Across voice coil	A71	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
53.		"	1400KC	"	Tune to 1400KC signal	"	A72, A73	"
54.		"	600KC	"	Tune to 600KC signal	"	A74	Clip a 10KΩ resistor across AM RF section of tuning gang. Adjust A73 for maximum output while rocking gang. Remove 10KΩ resistor.
55.		"	"	"	"	"	A75	Adjust for maximum output.
56.	Repeat RF Alignment until no improvement in sensitivity is noted.							

DISASSEMBLY INSTRUCTIONS

TV

1. Remove 7 control knobs from front panel.
2. Remove 2 wood screws and 2 metal screws. Remove rear cover.
3. Disconnect transmission line, built-in antenna, yoke plug, CRT socket, HV lead, phono audio cable-AC line to radio, and speaker lead.
4. Remove 8 chassis bolts. Remove chassis.

RADIO

1. Remove 2 clip spring and 2 pins from radio-phono slide rails.
2. Remove entire radio-phono unit.
3. Remove 7 wood screws. Remove baffle board.
4. Remove 4 speaker nuts. Remove speaker.

POWER SUPPLY

1. Disconnect power plug from radio chassis.
2. Disconnect phono motor.
3. Disconnect FM antenna and AM antenna plugs.
4. Disconnect jewel light.
5. Loosen clamp hold lead to radio.
6. Remove 4 chassis bolts. Remove chassis.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Substitute V18, V19, V20, V21, V23 and V24. Check adjustment of width (B4), horizontal linearity (B5) and horizontal drive (B3). Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check C102, C103, C97, R128, R129, T3, T5A, and other associated components.	Check C93, C94, C95, C96, L30 and other associated circuit components.

DRIVE LINES

Check adjustment of horizontal drive (B3). Substitute V18, V19, V20 and V21. Check C102, C103, C95, C96, C97, T3, T5A and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V18, V19, V20 and V21. Check adjustment of B3, B4 and B5. Check components associated with the horizontal output stage especially T3 and T5A.

FOLDS

Check by substitution V20 and V21. Check C102, C103 and other components associated with the damper filter network.

BARKHAUSEN OSCILLATION

Check by substitution V19. Check horizontal output transformer T3 and associated circuit.

XMAS TREE EFFECT

Substitute V18. Check L30, C93, C94, C95, C96 and other components associated with V18.

VERTICAL

LOSS OF SWEEP

Check by substitution V16 and V17. Check waveform at W11.

If Satisfactory	If Unsatisfactory
Check T4, T5B and other associated circuit components.	Check C76, C77, T2, R100 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V16 and V17. Check adjustment of height and vertical linearity controls. Check C4. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V16 and V17. Check T4, T5B, C4, C1C and other associated components.

COMPRESSED AT TOP

Check by substitution V16 and V17. Check C76, C77, C4 and other associated components.

FOLDS

Substitute V16 and V17. Check C76, C77, C4,C1C, T4, T5B and other associated circuit components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V18 and V15. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check adjustments of B1 and B2. Check components associated with the horizontal oscillator tube, V18.	Check adjustment of B6. Check C87, C89 and other associated circuit components.

CRITICAL HOLD

Substitute V15 and V18. Check adjustments of B1, B2 and B6. Check C87, C89, C88, C90, C91 and other associated components.

VERTICAL

LOSS OF SYNC

Substitute V10, V15 and V16. Check waveform at W8.

If Satisfactory	If Unsatisfactory
Check R95, R96, R97, R98, C73, C74 and other components associated with V16.	Check C71, C72 and other components associated with V15B and V16A.

CRITICAL HOLD

Substitute V10, V15 and V16. Proceed as outlined under "Loss of Sync".

TRIGGERING

Substitute V10, V15 and V16. Check circuit near these stages for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V9. Check picture tube. Check componets associated with V9 and picture tube especially peaking coils, plate load resistors and coupling capacitors. Check AGC network for proper operation.

SOUND BARS

C heck adjustment of local oscillator in RF tuner. Check 4.5MC trap, L24. Check video IF alignment.

NEGATIVE PICTURE

Substitute V9. Check video detector crystal and assembly. Check components associated with these stages. Check AGC network for proper operation. Check video IF stages for weak tubes and/or component failure.

POOR CONTRAST

Substitute V9. Check video detector crystal and assembly. Check components associated with these stages especially all coupling and bypass capacitors. Check picture tube and associated components.

SMEAR

Substitute V9. Check L22 and L26 for open. Check R54, R55, R56, R58, R57, R59 and R53 for change of value. Check C46 and C48. Check picture tube and other associated components. Check video detector crystal and assembly.

ONE WIDE BLACK BAR ACROSS PICTURE

Check RF tuner, video IF and video amplifier tubes for heater to cathode leakage.

TROUBLE SHOOTING AIDS (cont)

L. F. BLANKEN
3924 MEADE ST

AUDIO

WEAK OR NO SOUND

Check by substitution V11, V12, V13 and V14. Check V31, V32, V33, V34 and V35 by switching to AM Radio. If sound is satisfactory while on AM Radio, check components associated with V14, V13, V12 and V11. Check audio IF and ratio detector alignment. If sound is unsatisfactory on AM Radio check components associated with V31, V32, V33, V34, and V35.

BUZZ

Substitute V13. Check ratio detector alignment and components.

DISTORTED

Check by substitution V11, V12, V13 and V14. Check V31, V32, V33, V34 and V35 by switching to AM Radio position. Check stages of V34, V31, V32, V33, V34 and V35 using audio signal generator and scope. Apply audio signal across R77. Connect scope across secondary of T9.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF components and alignment.	Check components associated with V14, V31, V32, V33 and V34, especially all bypass and coupling capacitors.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M1. Check by substitution V18, V19, V20, V21 and V22. Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check C105, R131, T3, T5A, picture tube and other associated components.	Check C102, C103, C93, C94, C95, C96, C97, L30 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V18, V19, V20, V21, V22, V23 and V24. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check V22, V20, V21, V19, V18, V23 and V24. Check C105, R131, T3, T5A, picture tube and other associated components.

POWER

DEAD SET

If filaments fail to light, check AC interlock, switch on volume control, function selector switch on radio, and T1. If filaments light, check V23 and V24. Check B+ filter and decoupling components and circuit.

SMALL AND/OR DIM RASTER

Substitute V23 and V24. Check B+ filter and decoupling network.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6, V7 and V8. Check video detector assembly.

NO RASTER NO SOUND NO PICTURE

See "Dead Set".

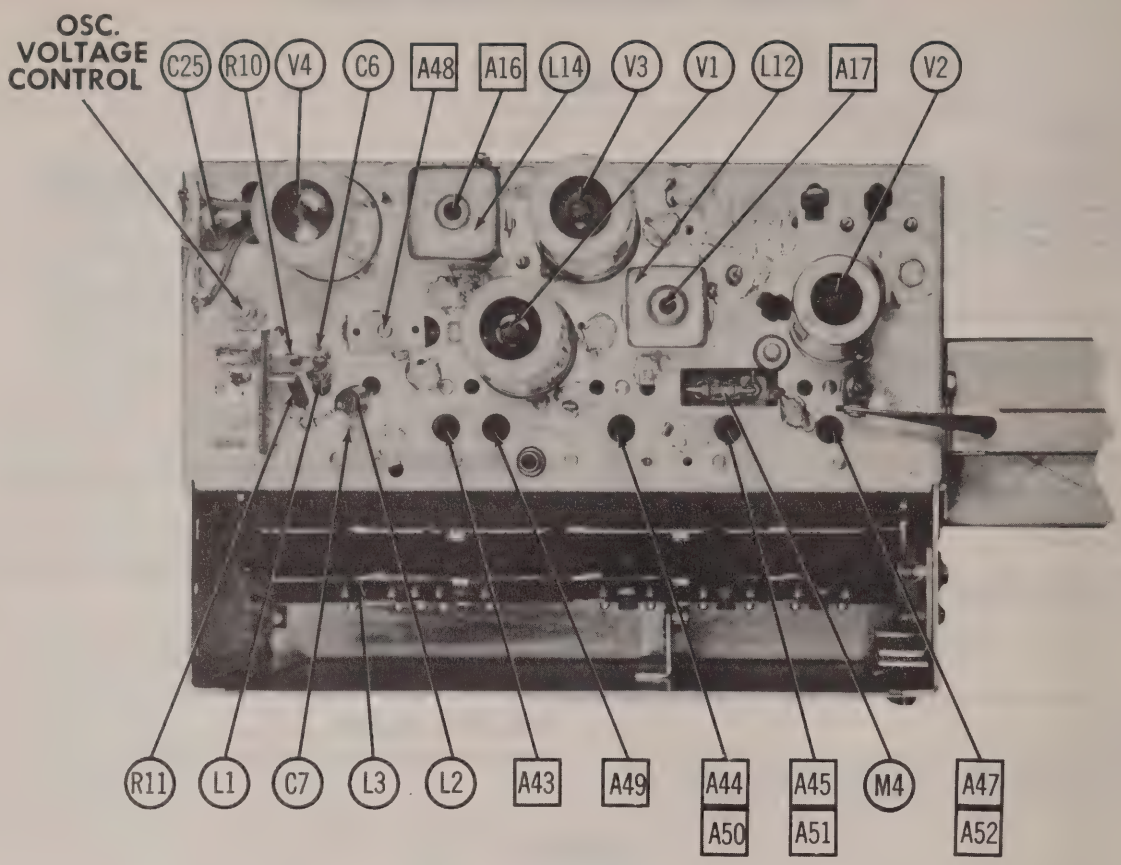
TOTAL LOSS OF SYNC

Substitute V10 and V15. Check associated circuit components.

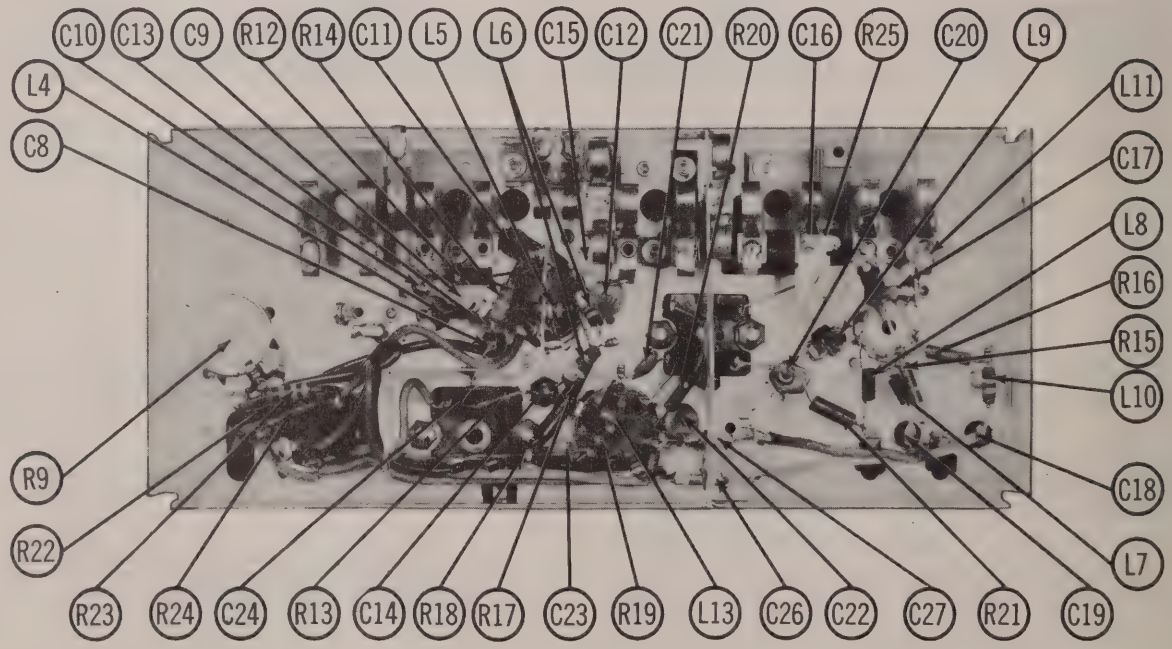
INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing especially T3 and C105.

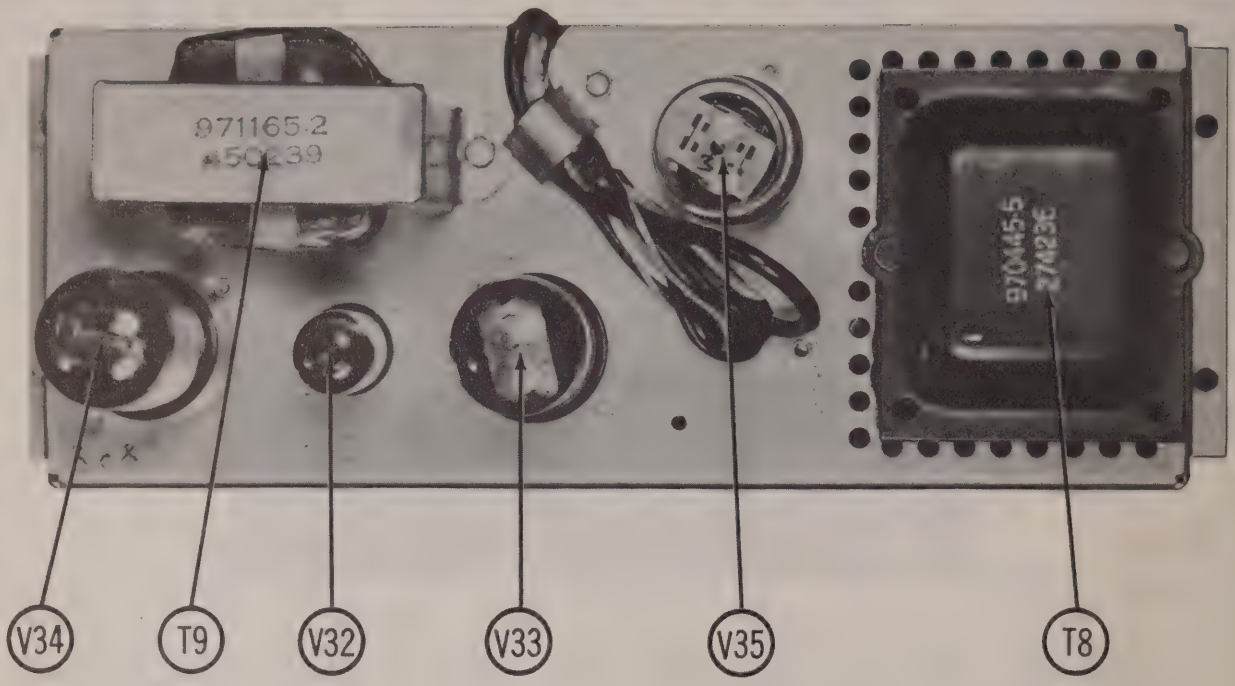
Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.



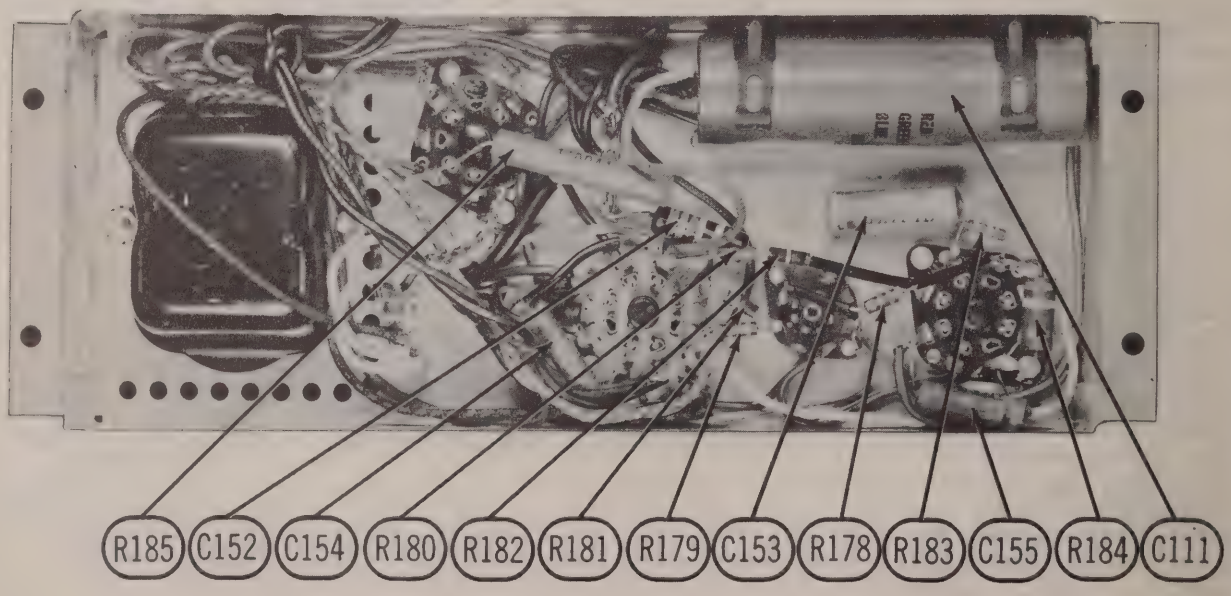
UHF-VHF TUNER TOP VIEW



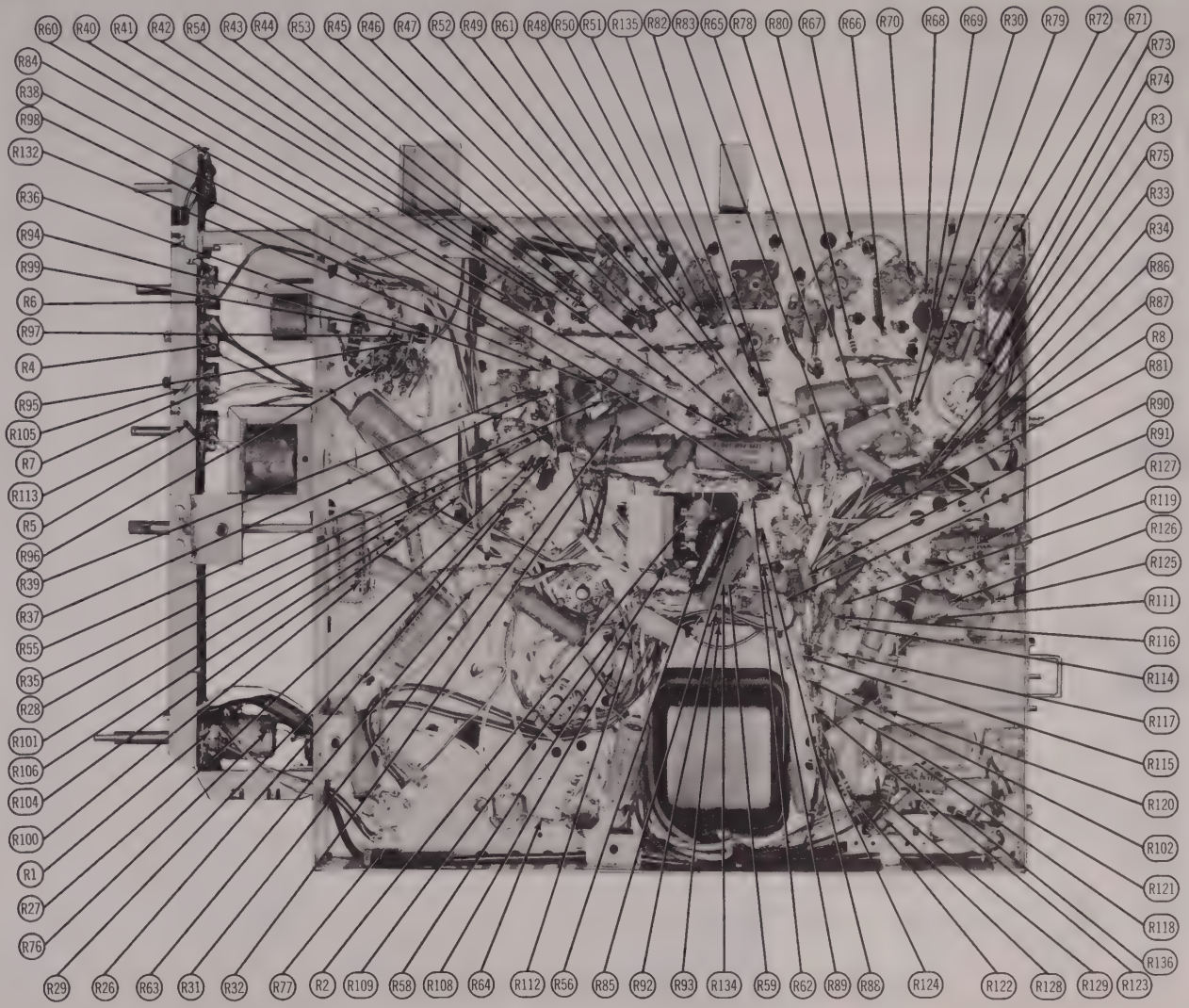
UHF-VHF TUNER BOTTOM VIEW



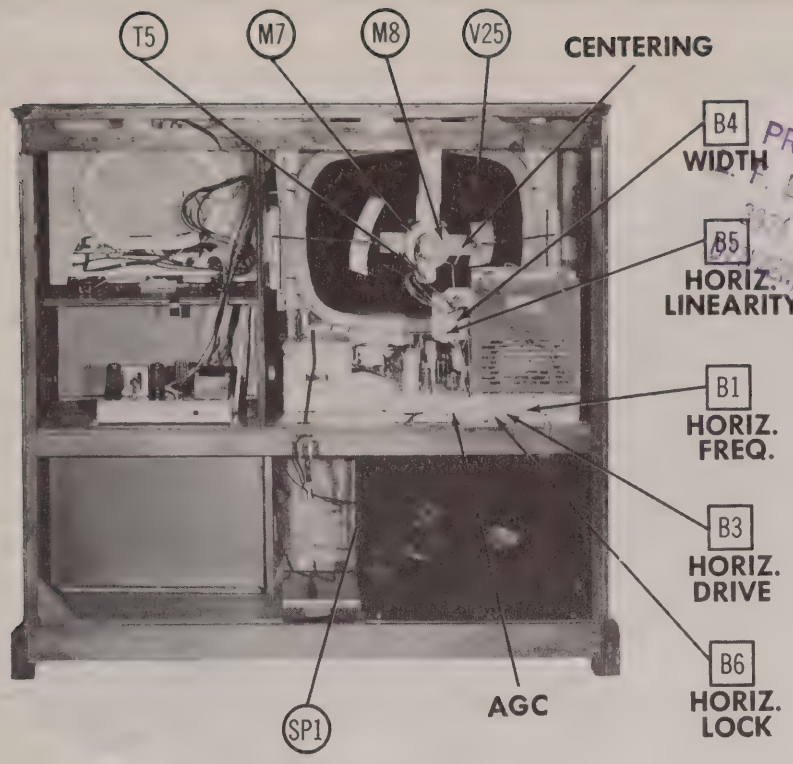
POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW



TV CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



PROPERTY OF
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..., COLORADO

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
If the picture cannot be synchronized horizontally with the horizontal hold control, adjust the horizontal frequency slug (B1) until the picture will synchronize. If picture will not synchronize adjust the horizontal waveform slug (B2) several turns out of the coil and readjust B1 to synchronize the picture.
If the picture width or linearity is incorrect, adjust the horizontal drive trimmer (B3) the width control slug (B4) and the horizontal linearity control slug (B5) for proper results.

HORIZONTAL WAVEFORM ADJUSTMENT
The horizontal waveform adjustment is made at the factory and normally will not require adjustment. B1 and B2 are adjusted simultaneously while watching the picture. Set the horizontal hold control fully clockwise. Turn B1 until the picture falls out of sync and one diagonal black bar sloping down to the right appears on the screen.
Turn B2 clockwise, at the same time adjusting B1 to maintain one bar on the screen.
Continue adjusting B1 and B2 in such a manner until the oscillator begins to motorboat, then adjust B2 counter clockwise until the motorboating stops. To check adjustment turn B1 until the picture synchronizes then reverse the direction of core rotation until the picture falls out of sync with diagonal bars sloping down to the right.
Continue to turn B1 in the same direction.
Additional bars should not appear on the screen. Instead the horizontal oscillator should start to motorboat. Retouch B2 until this condition is obtained. To observe the horizontal waveform connect the low capacity probe of an oscilloscope to terminal C of L30.
Turn the horizontal hold 1/4 turn from counter clockwise so that the picture is in sync.
The waveform on the scope should appear as in Fig. 12. Adjust B2 for broad and narrow peaks of equal height. If necessary while adjusting B2 keep the picture in sync with the horizontal hold control.

HORIZONTAL LOCKING RANGE ADJUSTMENT
With the horizontal hold control in full counter clockwise position momentarily interrupt the signal by switching off channel and back. If picture remains in sync turn B1 slightly and again switch off channel, repeating until picture loses sync, with diagonal lines sloping down to the left. Slowly turn the horizontal hold control clockwise and note the least number of bars obtained just before the picture pulls in sync. If the number is more than three adjust the horizontal locking trimmer (B6) slightly clockwise. If the number is less than two adjust B6 counter clockwise.
Recheck as above for the least number of bars and readjust B6, if necessary, until 2 or 3 bars are present. Turn the horizontal hold control fully clockwise and adjust B1 until the diagonal bar sloping down to the right appears on the screen, then reverse the direction of adjustment of B1 until the diagonal bar just disappears, having the picture in synchronization.

AGC CONTROL ADJUSTMENT
This control is adjusted at the factory and normally should not require readjustment.
To check the operation of the control, tune in a strong signal and synchronize the picture. Momentarily switch to another channel and back again. If the picture reappears immediately, the receiver is not overloading due to improper setting of the control. If the picture requires an appreciable portion of a second to reappear, or distorts the control should be readjusted.
Turn the control fully counter clockwise. The raster may be bent slightly, but this should be disregarded. Turn the control, clockwise until there is a very slight bend or change of bend in the picture. Then turn the control counter clockwise just enough to remove the bend or a change in bend.
If the signal is too weak to cause the picture to bend turn the control clockwise until snow in the picture becomes more pronounced, then counter clockwise until best signal to noise ratio is obtained.

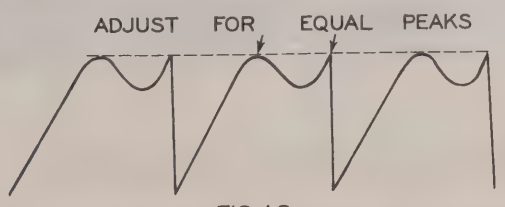
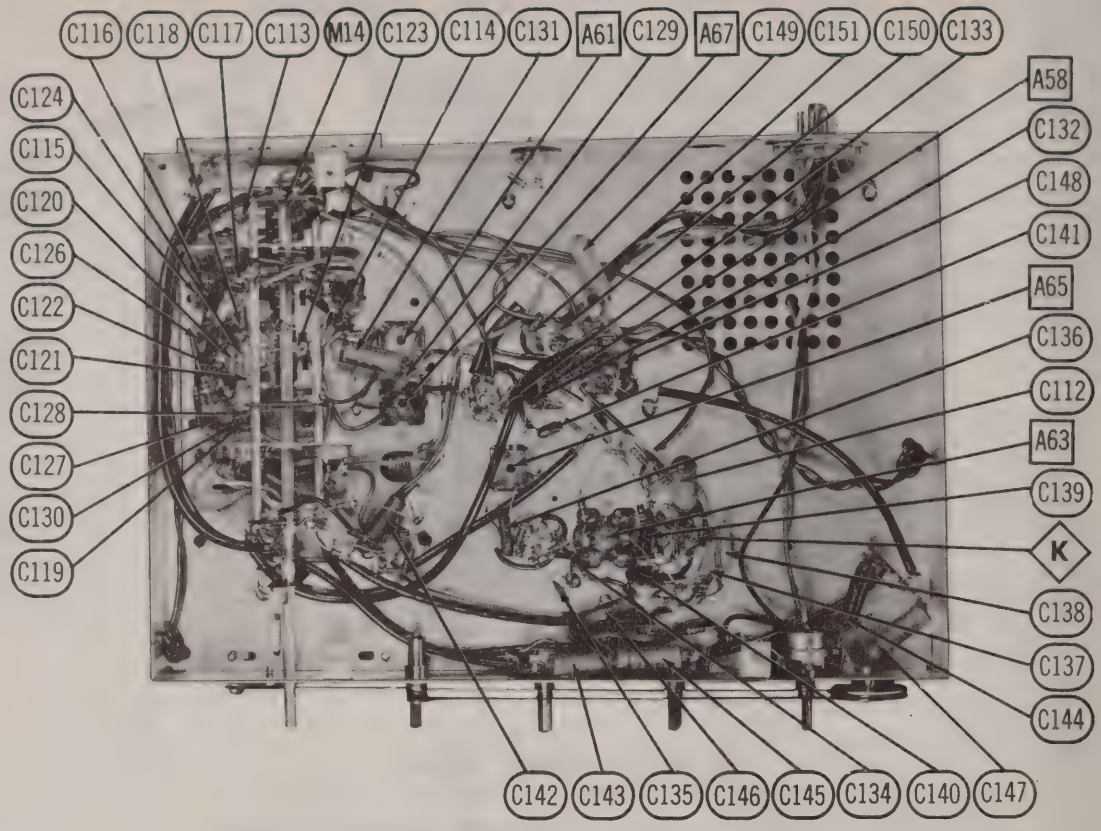
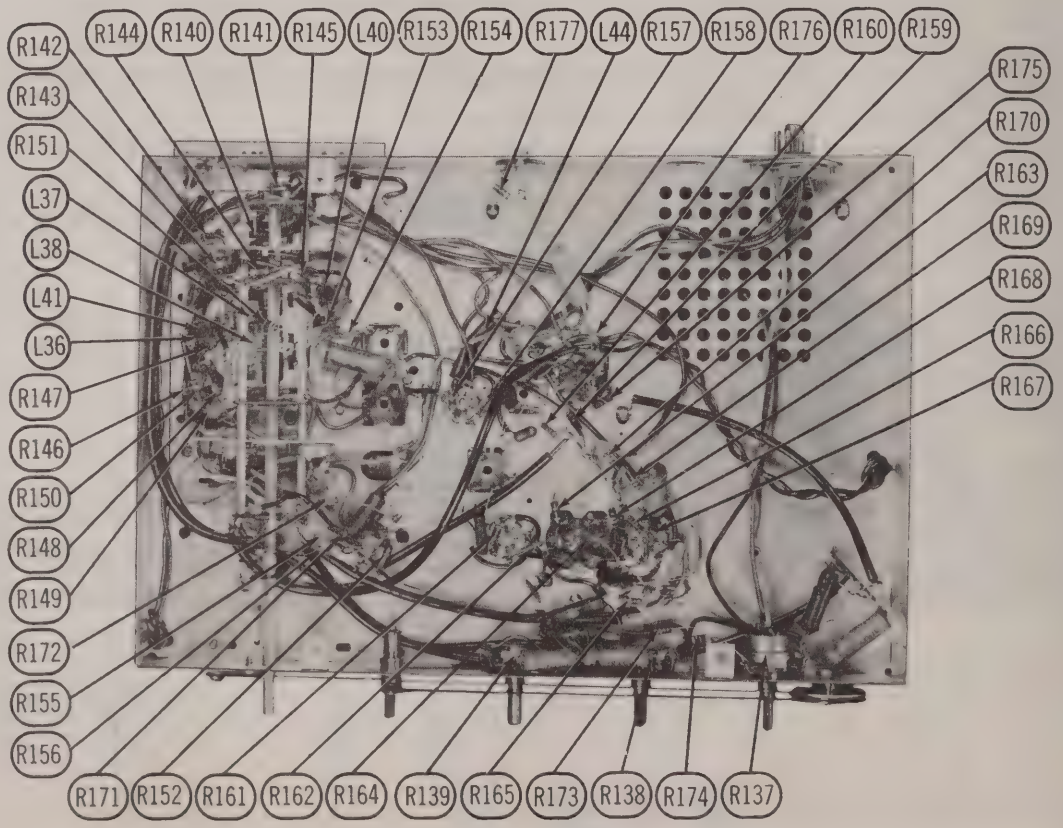


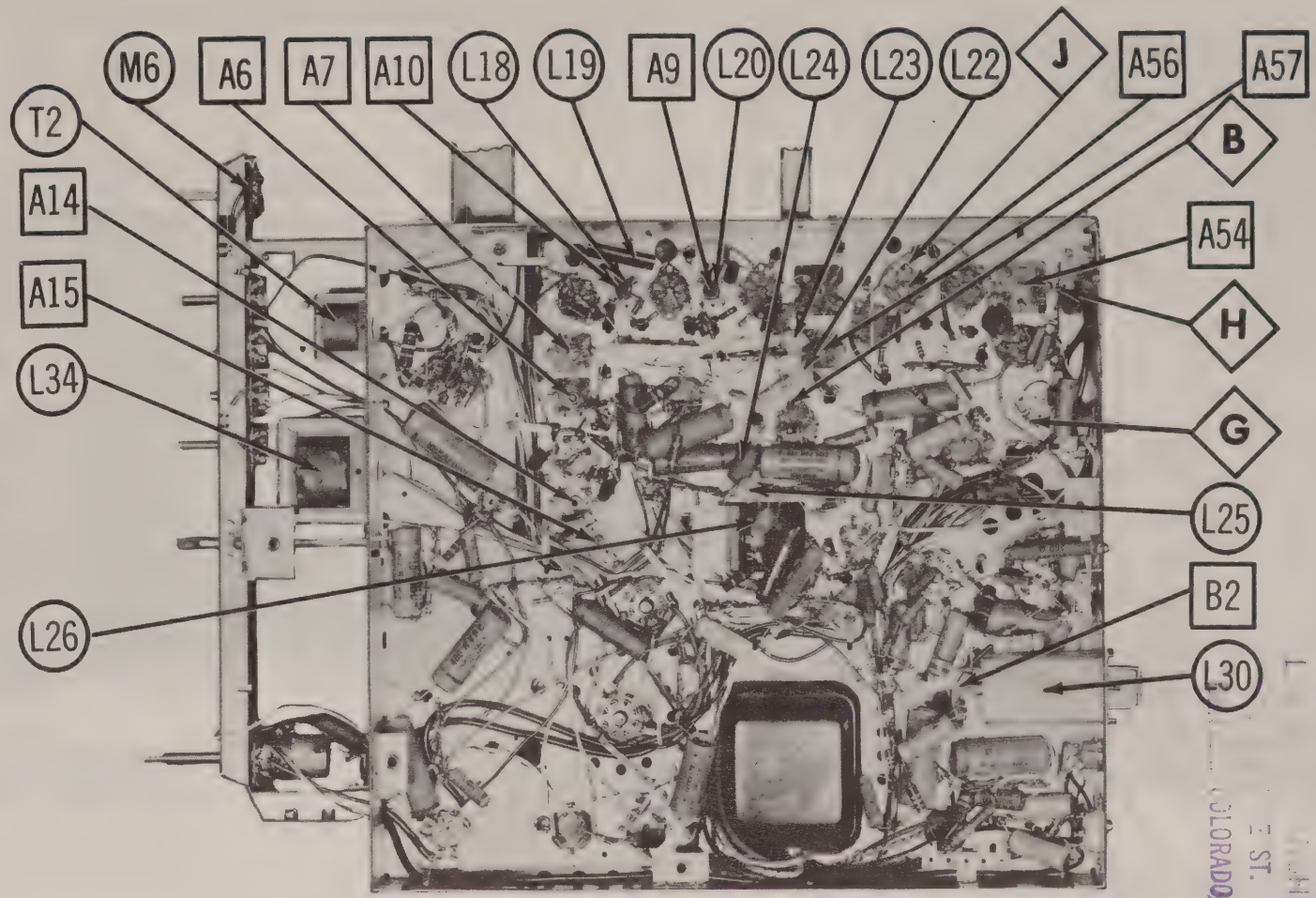
FIG. 12



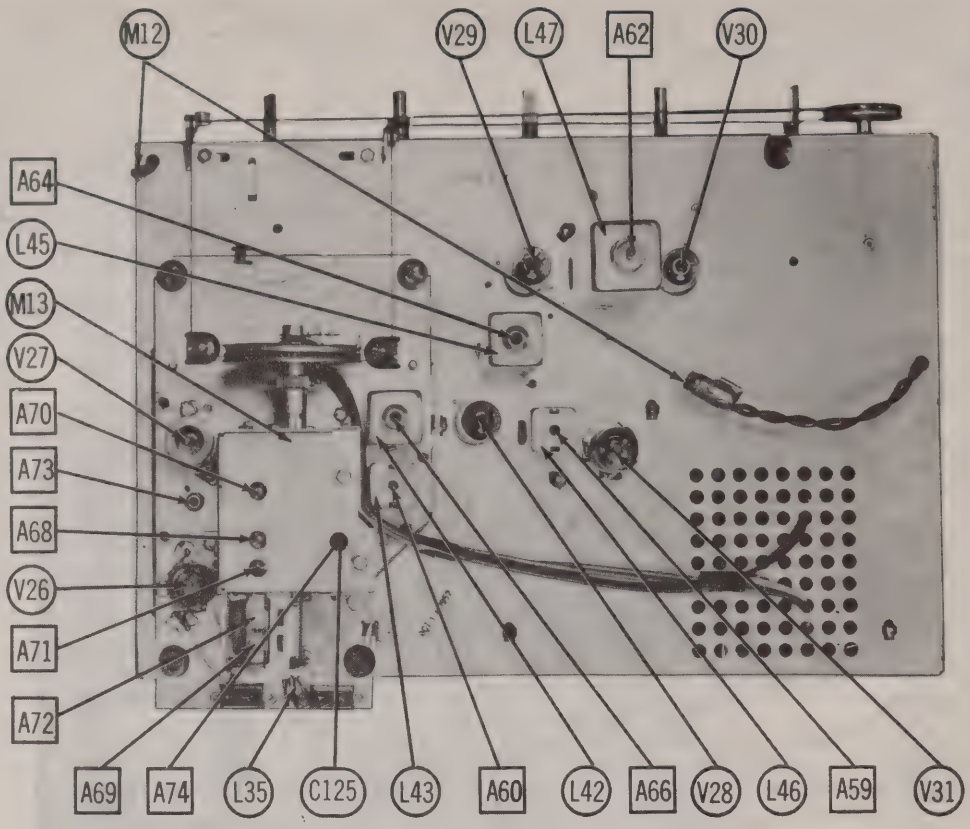
RADIO CHASSIS-BOTTOM VIEW



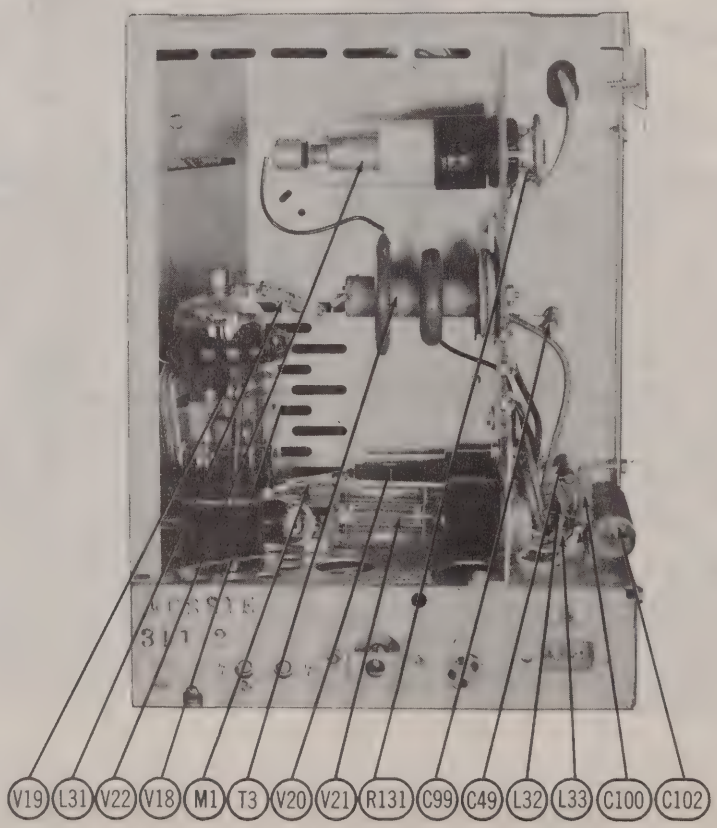
RADIO CHASSIS-BOTTOM VIEW



TV CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION



RADIO CHASSIS-TOP VIEW



HIGH VOLTAGE COMPARTMENT

TV PARTS LIST & DESCRIPTION

PROPERTY OF
E. F. BLANKENSHIP
DENVER, COLORADO

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	UHF Oscillator	6AF4	6AF4	7DK	
V3	IF Amplifier	6BQ7A	6BA7A	9AJ	
V4	Voltage Control	6S4	6S4	9AC	
V5	1st. Video IF Amp.	6AU6	6AU6	7BK	
V6	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V7	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V8	4th. Video IF Amp.	6CB6	6CB6	7CM	
V9	Video Output	6CL6	6CL6	6CL6	
V11	AGC Keying-Vert. Sync Sep.	12AU7	12AU7	9A	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Limiter	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V15	Horiz. Sync Sep.-Sync Amplifier	12AU7	12AU7	9A	
V16	Vert. Sync Amp.-Vert. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	6AQ5	6AQ5	7BZ	
V18	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6CD6G	6CD6G	5BT	
V20	Damper	6W4GT	6W4GT	4CG	
V21	Damper	6W4GT	6W4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	RCA VICTOR PART No.	SYLVANIA PART No.	GENERAL ELECTRIC PART No.		
V25	21AP4	21AP4	21AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰35	450	77474	AFH4-83		DO62		FP375	TVL-4714	
B	■25	450								
C	▲100	50								
C2A	▰35	450	75510	AFH4-16		DO15		FP445	TVL-4771	
B	▲10	450								
C	■35	450								
D	5	450								
C3A	▰70	450	77657	AFH4-16		DO15		FP450	TVL-4780	
B	■10	450		PRS450/10		BR1045A				
C	▲10	450								
D	5	450								
C4	5	450	28417	PRS450/4		BR445		TC70	TVA-1702	
C5	5	50	74521	PRS150/4		BR550		TC30	TVA-1303	
C6	56									
C7	56									
C8	1000		77615	CS-1B-001	SI-102		324-102	SC-521	507C-D1	
C9	2		77210							
C10	6		74182							
C11	680		77624	SI680	D6-681		GP2K-681	UC-5368	5GA-T68	
C12	1000		77252	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C13	1000		77252	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	1000		77615	CS-1B-001	SI-102		324-102	SC-521	507C-D1	
C15	56		71924							
C16	22		77621							
C17A	2		77667							
B	22									
C18	1000		77615	CS-1B-001	SI-102		324-102	SC-521	507C-D1	
C19	1000		77615	CS-1B-001	SI-102		324-102	SC-521	507C-D1	
C20	1000		77084	CN-1-001	MFT-1000				503C-D1	
C21	220		77625	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C22	1000		77252	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	1000		77252	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	10000		73960	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C25	470		77293	SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C26	1000		77084	CN-1-001	MFT-1000				503C-D1	
C27	1000		77084	CN-1-001	MFT-1000				503C-D1	
C28	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C29A	4700		76470	BPD-2X0047	DD3-502	TM5DD5	811-005	DC-525	5HK-2D47	
B	4700						811-005	DC-525		
C30	.22	200	73794	P488-22		PTE4P22		PT4025	4TM-P22	
C31	.22	400	73794	P488-22		PTE4P22		PT4025	4TM-P22	
C32	.22	200	73794	P488-22		PTE4P22		PT4025	4TM-P22	
C33	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C34	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C35	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C36	.22	200	73794	P488-22		PTE4P22		PT4025	4TM-P22	
C37A	4700		76470	BPD-2X0047	DD3-502	TM5DD5	811-005	DC-525	5HK-2D47	
B	4700						811-005	DC-525		
C38	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C39A	4700		76470	BPD-2X0047	DD3-502	TM5DD5	811-005	DC-525	5HK-2D47	
B	4700						811-005	DC-525		
C40	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C41	1500		75166						501C-D15	
C42	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	

TV PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C43A	4700		76470	BPD-2X0047	DD3-502	TMSDD5	81-005	DC-525	5HK-2D47	
B	4700						81-005	DC-525		
C44	10000		73950	BPD-01	DD-103	TM5S1	81-01	DC-511	5HK-S1	
C45	.0682	400	73806							
C46	47		39043	S147MP0	TCE-47		MP0K-470	Z7-5447	5TCC-Q47	
C47	15		39044	S115MP0	TCE-15		MP0K-150	Z7-5415	5TCC-Q15	
C48	.33	400	73794	P488-33		PTE4P33		PT4025	4TM-P33	
C49	39	3500	76574							
C50	220	1000	75348							
C51	.0087	600	73599							
C52	.0047	400	73800	P488-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C53	.0082	400	73808							
C54	.0068	400	73789							
C55	10000		73960	BPD-01	DD-103	TM5S1	81-01	DC-511	5HK-S1	
C56A	10000		75877	BPD-2X01	DD3-103	TM5DS1	81-01	DC-511	5HK-3S1	
B	10000						81-01	DC-511		
C57	56		71894	S156N750	TCN-56		W750L-560		5TCU-Q56	
C58A	10000		75877	BPD-2X01	DD3-103	TM5DS1	81-01	DC-511	5HK-2S1	
B	10000						81-01	DC-511		
C59	470	500	39644	1469-0005		5R5T5		MCB245	MS-35	
C60	470	500	39644	1469-0005		5R5T5		MCB245	MS-35	
C61	.0022	600	73595	P488-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C62	.0018	600	73581							
C63	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT4S11	4TM-S1	
C64	.0027	600	73599							
C65	.039	200	73790							
C66	330	500	39640							
C67	.047	600	73553	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C68	270	500	39638							
C69	.033	400	73552							
C70	270		47617	S1270	D6-271		GP2K-271	UC-5327	5GA-T27	
C71	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT4S11	4TM-S1	
C72	100		39396	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C73	100		39396	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C74	100		39396	S1100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C75	.0047	600	73920							
C76	.1	600	73557							
C77	.22	600	74907	684-25		PTE6P22		PT6025	6TM-P22	
C78	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C79	.0022	1000	73603							
C80	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C81	.1	600	73557	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C82	.022	600	73798	P688-022	DF-203	PTE6S22		PT6122	6TM-S22	
C83	.1	400	73551	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C84	.22	400	73794	P488-22		PTE4P22		PT4025	4TM-P22	
C85	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C86	180		71834							
C87	82	1000	76474							
C88	.047	400	73558	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C89	.047	1000	76474							
C90	.47	200	73787	P288-47		PJ2P5		PT405	2TM-P47	
C91	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C92	.047	400	73558	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C93	270	1000	76579							
C94	.01	600	73594							
C95	.0013	600	77797							
C96	.001	1000	75843							
C97	.047	600	73592	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C98	.47	200	73787	P288-47		PJ2P5		PT405	2TM-P47	
C99	33	6000	76577							
C100	150	2000	76576							
C101	180	3500	76575							
C102	.068	1000	73815							
C103	.068	1000	73815							
C104	.01	600	73561	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C105	500	30000	76488							
C106	56	2000								
C107	10	2000								
C108	.047	400		489ZX-05		PJ4S47		PT4147	4TM-S47	Note 1
C109	.047	400		489ZX-05		PJ4S47		PT4147	4TM-S47	Note 1
C110	470									Note2

Note 1. Some Models use .01MFD in this application (part #73594).
Note 2. Not used in all Models.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200KΩ		77814	QJ-447 *	RTV-406		UF2541	Brightness-Panel
B	1Meg						UR16T25 †	Volume - Tapped ⑤ 200KΩ-Rear
C	Switch						U8-26	Attach to R1B
R2	15KΩ		76445	Q15-1SXXX				Picture-Tapped ⑤ 4875Ω & 10KΩ
R3	2500Ω		77199					Ratio Det. Balance
R4A	2.5Meg		77640	QU-239	AG-94-8	AB-83	U-255	Height
B	Shaft		Not Req.	SQ	KS8-3	AK-1	Not Req.	Attach to R4A
R5A	75KΩ		77639	QU-125	AG-47-5	AB-35	U-41	Horiz.Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A
R6A	850KΩ		77653	QU-137	AG-81-8	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R6A
R7A	1500Ω		77883	QU-110	AG-11-8	AB-5	U-8	Vert. Linearity
B	Shaft		Not Req.	SQ	KS8-3	AK-1	Not Req.	Attach to R7A
R8A	200KΩ		77854	QU-129	AG-52-8	AB-46	U-43	AGC
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9	100KΩ		77834					Osc. Voltage

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS, Bll-129 & P1-200 (Panel)
Bll-137X & R1-216 (Rear) & SWITCH 76-1.
† UNIVERSAL REPLACEMENT (Mallory exact duplicate part #UE13608)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	IRC PART No.	NOTES
R10	100KΩ	½	503410	BTS-100K	
R11	100KΩ	½	503410	BTS-100K	
R12	120Ω	½	503112	BTS-120	
R13	1000Ω	½	503210	BTS-1000	
R14	32KΩ	½	503322	BTS-32K	
R15	10KΩ	½	503310		
R16	1000Ω	½	503210	BTS-1000	
R17	8.2Meg	½	503582		
R18	8.2Meg	½	503582		
R19	470KΩ	½	503447	BTS-470K	
R20	120Ω	½	503112	BTS-120	
R21	100Ω	½	503110	BTS-100	
R22	120KΩ	½	503412		
R23	270KΩ	½	503437		
R24	100Ω	½	503110	BTS-100	
R25	47Ω	½	503047		
R26	1000Ω	½	503210	BTS-1000	
R27	1000Ω	½	503210	BTS-1000	
R28	82KΩ 5%	½	8064	BTS-82K 5%	
R29	10KΩ	½	503310	BTS-10K	
R30	270KΩ 5%	½	502427	BTS-270K 5%	
R31	3.8Meg 5%	1	512536	BTA-3.8Meg 5%	
R32	10KΩ	½	503310	BTS-10K	
R33	270KΩ 5%	½	502427	BTS-270K 5%	
R34	100KΩ	½	503410	BTS-100K	
R35	100Ω 5%	½	502110	BTS-100 5%	
R36	33KΩ	½	503333	BTS-33K	
R37	1000Ω	½	503210	BTS-1000	
R38	33KΩ	½	503333	BTS-33K	
R39	1000Ω	½	503210	BTS-1000	
R40	560 5%	½	502056	BTS-56 5%	
R41	33KΩ	½	503333	BTS-33K	
R42	1000Ω	½	503210	BTS-1000	
R43	5600Ω 5%	½	502256	BTS-5600 5%	
R44	68Ω 5%	½	34763	BTS-68 5%	
R45	10KΩ	½	503310		
R46	2200Ω	½	503222	BTS-2200	
R47	56KΩ 5%	½	502356		
R48	180Ω	½	503118	BTS-180	
R49	8200Ω	½	503282	BTS-8200	
R50	18KΩ	½	513318	BTA-18K	
R51	6800Ω	½	513256	BTA-6800	
R52	3900Ω 5%	½	502239	BTS-3900 5%	
R53	33Ω	½	503033	BTS-33	
R54	220Ω	½	503123		
R55	4700Ω	½	503247	BTS-4700	
R56	9750Ω	10	76642		
R57	680Ω	½	503168	BTS-680	
R58	5600Ω	1	513256	BTA-5600	
R59	33KΩ	½	513330	BTA-33K	
R60	150KΩ	½	503415	BTS-150K	
R61	470KΩ	½	503447	BTS-470K	
R62	1000Ω	½	503210		
R63	150KΩ	½	503415	BTS-150K	
R64	100KΩ	½	503410	BTS-100K	
R65	8200Ω 5%	½	502082	BTS-82 5%	
R66	1000Ω	½	503210	BTS-1000	
R67	47KΩ	½	503347		
R68	33KΩ	½	503333	BTS-33K	
R69	1000Ω	½	503210	BTS-1000	
R70	56KΩ	½	503347	BTS-56K	
R71	47Ω	½	503047	BTS-47	
R72	39KΩ	½	503339	BTS-39K	
R73	1000Ω	½	503210	BTS-1000	
R74	6800Ω	½	14659	BTS-6800 5%	
R75	6800Ω 5%	½	14659	BTS-6800 5%	

Note 1. Not used in all Models.
Note 2. Some Models may use a 100Ω (2 watt) resistor in this application.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	IRC PART No.	NOTES
R76	12KΩ	½	503312	BTS-12K	
R77	10Meg	½	503610	BTS-10Meg	
R78	680KΩ	½	503468	BTS-680K	
R79	4.7Meg	½	503547	BTS-4.7Meg	
R80	470KΩ	½	503447	BTS-470K	
R81	33KΩ	½	503339	BTS-33K	
R82	22KΩ	½	503322	BTS-22K	
R83	270KΩ	½	503427	BTS-270K	
R84	27KΩ	½	503327	BTS-27K	
R85	27KΩ	½	503327	BTS-27K	
R86	3.9Meg	½	503539	BTS-3.9Meg	
R87	220Ω 5%	½	502422	BTS-220K	
R88	6800Ω	½	503268	BTS-6800	
R89	1Meg	½	503510	BTS-1Meg	
R90	8200Ω	½	513282	BTA-8200	
R91	1800Ω 5%	½	502218	BTS-1800 5%	
R92	220KΩ	½	503422	BTS-220K	
R93	1Meg	½	503510	BTS-1Meg	
R94	33KΩ	½	503333	BTS-33K	
R95	100KΩ	½	503410	BTS-100K	
R96	15KΩ	½	503315	BTS-15K	
R97	470KΩ	½	503447	BTS-470K	
R98	470KΩ	½	503447	BTS-470K	
R99	1.2Meg 5%	½	502512	BTS-1.2Meg 5%	
R100	470KΩ	½	503447	BTS-470K	
R101	6800Ω 5%	½	14659	BTS-6800 5%	
R102	150KΩ	½	503415	BTS-150K	
R103	220KΩ	½	503422	BTS-220K	Note 1
R104	3.3Meg	½	503533	BTS-3.3Meg	
R105	560Ω	½	503156	BTS-560	
R106	68KΩ	1	513368	BTA-68K 5%	
R107	470Ω	½	503147	BTS-470	Note 1
R108	10KΩ	½	503310	BTS-10K	
R109	33000Ω	½	502333	BTS-3300	
R110	560Ω	½	503156	BTS-560	
R111	150KΩ	½	503415	BTS-150K	
R112	39KΩ	½	503339	BTS-39K	
R113	56KΩ	½	503356	BTS-56K	
R114	330KΩ	½	503433	BTS-330K	
R115	820KΩ	½	503482	BTS-820K	
R116	68KΩ	½	503368	BTS-68K	
R117	180KΩ	½	503418	BTS-180K	
R118	3900Ω	½	503239	BTS-3900	
R119	83KΩ	1	513282	BTA-82K	
R120	10KΩ	½	503310	BTS-10K	
R121	33KΩ	½	503339	BTS-33K	
R122	68KΩ	1	513368	BTA-68K	
R123	390KΩ	½	503439	BTS-390K	
R124	330KΩ	½	503433	BTS-330K	
R125	1Meg	½	503510	BTS-1Meg	
R126	47Ω	½	503047		
R127	200Ω	7		1 3/4A-200	Note 2
R128	27KΩ	2	523327	BTB-27K	
R129	22KΩ	3	523322	BTB-22K	
R130	270KΩ	½	503427	BTS-270K	
R131	1.5Ω	½	76468		
R132	15KΩ	2	523315	BTB-15K	
R133A	600Ω	18			
B	500Ω	6			
C	2000Ω	9	77812		
D	1200Ω	1			
E	10KΩ	5			
R134	15KΩ	10	77815	1 3/4A-16K	
R135	470KΩ	½	503447	BTS-470K	
R136	100KΩ	½	503410	BTS-100K	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ③3.1A	640VCT ⑤ 8A	5VAC ⑤2.4A	6.3VAC ⑤2.4A	77649	P-8166①	P-3053②			

① Parallel the two 6.3V 5A winding.
② Parallel the 5V winding and the 6.3V 7A windings.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI	RATING DC RESISTANCE SEC.	RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	600Ω tap @135Ω		77650						Vert. Osc. Trans.
T3	290Ω tap @8Ω	0Ω	76501 ①						Horiz.Output Trans.
T4	820Ω	.6Ω	76494	A-8140④	A-3080 ②	TSO-6④	A-103X④		Vert.Output Trans.
T5A	25Ω		76853 ③						Horiz.Deflection Coils
B	3.3Ω								Vert.Deflection Coils
T6	12Ω		76483		MWC-3④	TW-5	WC-12 ⑤		Horiz.Lin. Coil
T7	120Ω		76484						Width Coil

① Does not include Fil. winding.
② Drill new mounting holes.
③ Includes 8 contact male connector.
④ Enlarge mounting hole.
⑤ Connect to coded blue and green terminals.

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	IF Trap	0Ω		77826				
L2	IF Trap	0Ω		77826				
L3A	VHF Ant.,RF Mixer & Osc. Coils	0Ω		77602				Channels 2 - 4, includes capacitors
B	VHF Ant.,RF, Mixer & Osc. Coils	0Ω		77603				Channels 5-6, includes capacitors
C	VHF Ant.,RF, Mixer & Osc. Coils	0Ω		77804				Channels 7-10, includes capacitors
D	VHF Ant.,RF, Mixer & Osc. Coils	0Ω		77605				Channels 11-13, includes capacitors
E	UHF Ant.,RF, Mixer & Osc. Coils	0Ω						Channels 14-52, includes capacitors
F	UHF Ant.,RF, Mixer & Osc. Coils	0Ω						Channels 53-83 includes capacitors
L4	IF Trap	.3Ω		77628				
L5	Neutr.Coil	0Ω		77627				Wound on 470KΩ resistor
L6	RF Choke	2Ω		77695				2 Coils in series (11 Microhenries)
L7	Fil. Choke	0Ω		77681				
L8	Fil. Choke	0Ω		77632				
L9	Cathode Choke	0Ω		77629				
L10	RF Choke	0Ω		78224				
L11	Osc.Coil Fine Tuning	0Ω						
L12	UHF-VHF IF Input Trans.	.1Ω	.1Ω	77809				
L13	Feedback Coil	1.8Ω		77634				
L14	UHF-VHF IF Output Trans.	.3Ω	.2Ω	77610				Includes 10KΩ resistor
L15	1st.Video IF Grid	.2Ω	.2Ω	77198	17-4531		6216	Includes trap & 5.6KΩ resistor
L16	1st.Video IF Plate	.2Ω		77197			6217	Includes 4.7KΩ resistor 100MMF Cap. & trap
L17	2nd.Video IF Grid	.2Ω		76435			6218	Includes trap
L18	2nd.Video IF Plate	.3Ω	.3Ω	76433	17-4523		6219	
L19	Fil.Choke	0Ω		73477	19-3001	TV-189	4604	1.36 Microhenries
L20	3rd.Video IF	.3Ω	.3Ω	76433	17-4523		6219	
L21	4th.Video IF	.3Ω	.3Ω	76436				Includes 10KΩ resistor, IN64 Crystal detector (part #76875), 10 MMF Cap., & 36 Microhenries Series Peaking Coil
L22	Series Peaking Coil	5.6Ω		76846	19-3075 *	TV-186 *	6172 *	72 Microhenries, wound on 3.3KΩ resistor
L23	Shunt Peaking Coil	17Ω		75252	19-3500	TV-188	6174	500 Microhenries
L24	4.5MC Trap	2.2Ω		76482	20-1004 †	TV-181 †	1470 †	Wound on 47MMF Cap.
L25	Shunt Peaking Coil	13Ω		76252	19-3500	TV-188	6174	500 Microhenries
L26	Series Peaking Coil	7.5Ω		76847	19-3180 ▲	TV-182	6179	180 Microhenries, wound on 22KΩ resistor Includes 10MMF Cap., tapped @ 6Ω
L27	1st.Sound IF	7.5Ω		76437	17-1025			
L28	2nd.Sound IF	3.6Ω	2.2Ω	76438	17-1021	TV-108 ■	1466 ■	Tertiary winding - .6Ω Tapped @ 80Ω, horiz. waveform winding -38Ω
L29	Ratio Det.	4.4Ω	.2Ω CT	76439	17-1033	TV-110	1468	
L30	Horiz.Osc.	120Ω		76440	20-1402	TV-183	6183	
L31	RF Choke	2.8Ω		76510			4606	4.7 Microhenries, (JRC part #CL-1)
L32	RF Choke	.72Ω		76840			4604	1.5 Microhenries (JRC part #CL-1)
L33	RF Choke	.72Ω		76840			4604	1.5 Microhenries (JRC part #CL-1)

* Parallel with 3.3KΩ resistor
† Drill mounting hole.
▲ Parallel with 22KΩ resistor
■ Drill new mounting holes.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~/1	RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L34	.300 ADC	4Ω	1.6 Hy	77676	C-2326 ①	C-2996 ①	TR-1733 ①	C-17X ①

① Drill one new mounting hole.

FUSES

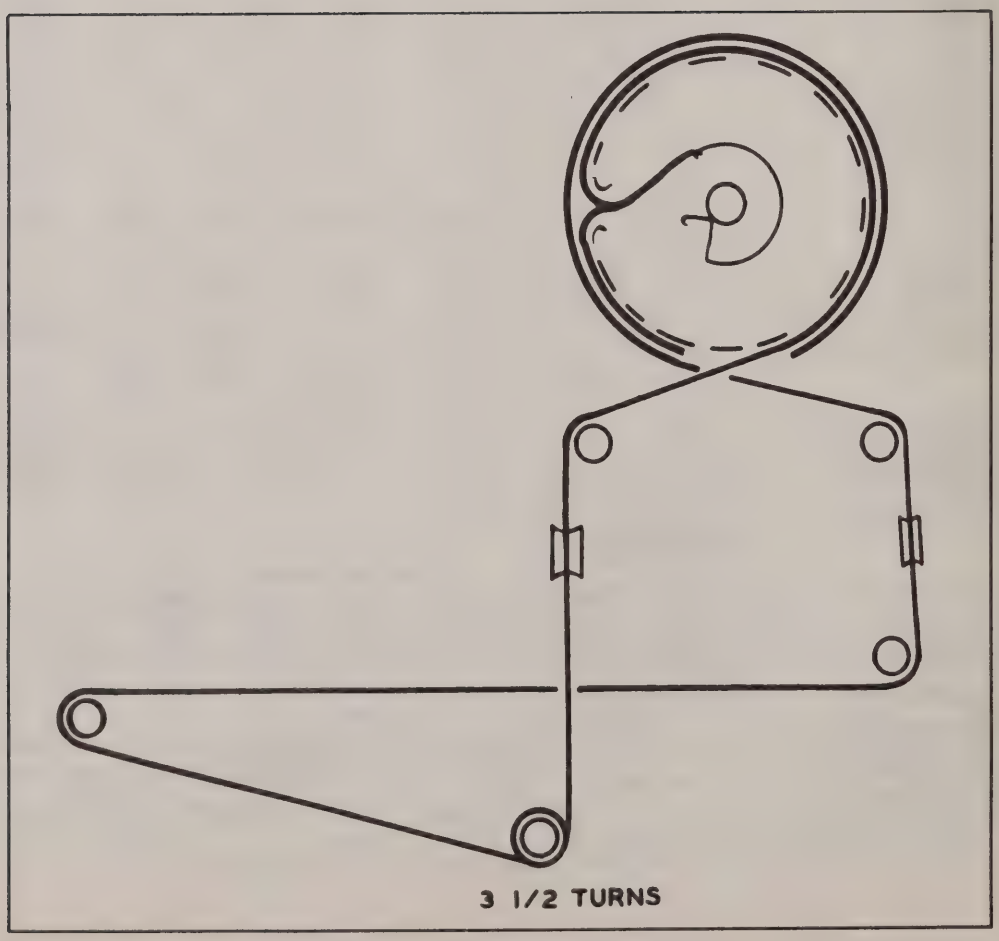
ITEM No.	TYPE	RATING	RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG P/T	3/10 A. 250 V.			318.300		GJV 3/10	

RCA VICTOR MODELS 21-D-346, U (Ch. KCS81E, D, RC1111A, RS141A)

TV PARTS LIST & DESCRIPTION (continued)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M2	Pilot Lamp	11765	Channel Indicator (Type #51)
M3	RF Tuner	KRK12	
M4	Crystal Diode	77489	UHF Converter (1N82)
M5	Crystal Diode	76675	Video Detector (1N64)
M6	Switch	77813	Tone
M7	Focus Magnet	76168	Includes centering device
M8	Ion Trap	76141	
A15	Trimmer Cap.	71496	IF Link, 5-70MMF
B3, B6	Trimmer Cap.	71807	Horiz. Locking, horizontal drive, 10-160MMF (2 used)
	Back Cover (TV)	77863	
	Safety Glass	77745	
	Mask	77768	
	Cover & Case Assy	77864	For hidden controls
	Cover Assy.	77759	Channel markers (complete)
	Disc	77756	Channel Indicator
	Knob	77751	Channel Selector
	Knob	77968	Channel Selector (Late Type)
	Knob	77750	Fine Tuning
	Knob	77709	Brightness
	Knob	77699	Contrast
	Knob	77735	Tone
	Knob	77710	Off/On Volume



DIAL CORD STRINGING

RADIO PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V26	RF Amplifier	6CB6	6CB6	7CM	
V27	Converter	6J6	6J6	7BF	
V28	FM AM IF Amp.	6BA6	6BA6	7BK	
V29	Driver	6AU6	6AU6	7BK	
V30	Ratio Detector	6AL5	6AL5	6BT	
V31	AM Det. AVC-AF Amplifier	6AV6	6AV6	7BT	
V32	Phase Inverter	6C4	6C4	6BG	
V33	Audio Output	6V6GT	6V6GT	7S	
V34	Audio Output	6V6GT	6V6GT	7S	
V35	Rectifier	5Y3GT	5Y3GT	5T	

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DENVER, COLORADO

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C111A	30	450	77324	PRS450/30-30		C103		3N539	R1326	Red
B	30	350						TC22		Green
C	40	25		PRS50/50						Blue
C112	2	50	73747	PRS150/4		BBR-2-50T		TC302	TVA-1301	
C113	220		75611	SI220	D6-221		GP2K-221	UC-5322	5GA-T22	
C114	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C115	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C116	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C117	100		39396	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C118	470	500	39644	1469-0005		5R5T5		MCB245	MS-35	
C119	4700		73473	BPD-0047	MD-502	TM5D5	811-005	DC-525	5HK-D47	
C120	6.8		77352							
C121	68		75612	SI68N750	TCN-68		N750L-680		5TCU-Q68	
C122	15		39044	SI15N750	TCN-15		N750K-150	NT-5415	5TCU-Q15	
C123	68		75612	SI68NP0	TCZ-68		NP0L-680	ZT-5468	5TCC-Q68	
C124	150		75614							
C125	5		75613							
C126	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C127	47		76348	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C128	5		75613	SI5N750	TCN-5		N750K-050	NT-555	5TCUB-V5	
C129	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C130	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C131	.047	200	73558	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C132	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C133	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C134	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C135	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C136	.005	200	72490	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C137	330	500	39640	1469-00035						
C138	330	500	39640	1469-00035						
C139	.005	200	72490	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C140	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C141	150		75614	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C142	.0018	600	77468	SI1800	D6-182		GP2-333-182	UC-5418	5HK-D18	
C143	.0047	400	73920	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C144	.0033	400	73795	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C145	.018	200	77469							
C146	.015	200	73797	P288-015		PTE6S15		TP400	6TM-S15	
C147	.022	400	73562	P488-022	DF-203	PTE4S22		PT4122	4TM-S22	
C148	150		75614	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
C149	.01	400	73561	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C150	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C151	4700		73473	BPD-0047	DD-502	TM5D5	811-005	DC-525	5HK-D47	
C152	.0068	400	73789	B488-0068	D6-682	PTE6D68	GP2-333-682		6TM-D68	
C153	.022	400	73562	P488-022		PTE4S22		PT4122	4TM-S22	
C154	.001	1000	75643	P1088-001		PTE16D1		PT1621	MB-D1	
C155	.001	1000	75643	P1088-001		PTE16D1		PT1621	MB-D1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R137A	1.5Meg	½	75537	Q18-139XX	AT-95	SBT-222-S	UDT-291	Volume-Tapped @ 200KΩ & 400KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R137A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R137A
R138	2Meg	½	75561	Q17-139		B-77		Bass
R139A	2Meg	½	75562	Q13-139	AG-66-Z	B-76	U-55	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R139A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R140	2.2Meg	½	503522	BTS-2.2Meg	
R141	1000Ω	½	503210	BTS-1000	
R142	39Ω	½	503039	BTS-39	
R143	150KΩ	½	503415	BTS-150K	
R144	8200Ω	½	503282	BTS-8200	
R145	680Ω	½	503168	BTS-680	
R146	2.2Meg	½	503522	BTS-2.2Meg	
R147	18KΩ	½	503318	BTS-18K	
R148	100Ω	½	503110		
R149	100KΩ	½	503410	BTS-100K	Note
R150	22KΩ	½	503322	BTS-22K	Note
R151	390Ω	½	503139		
R152	2.2Meg	½	503522	BTS-2.2Meg	
R153	100KΩ	½	503410	BTS-100K	Note

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R154	22KΩ	½	503322	BTS-22K	Note
R155	220KΩ	½	503422	BTS-220K	
R156	150KΩ	½	503415	BTS-150K	
R157	68Ω	½	503068	BTS-68	
R158	22KΩ	½	503322	BTS-22K	
R159	680Ω	½	503168	BTS-680	
R160	56KΩ	½	503356	BTS-56K	
R161	120Ω	½	503112	BTS-120	
R162	22KΩ	½	503322	BTS-22K	
R163	680Ω	½	503168	BTS-680	
R164	100Ω	½	503110	BTS-100	
R165	15KΩ	½	503315	BTS-15K	
R166	1200Ω	½	502212	BTS-1200	
R167	3300Ω	½	502233	BTS-3300	

RADIO PARTS LIST & DESCRIPTION (continued)

RESISTORS (cont)

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R168	39KΩ	½	503339	BTS-39K	
R169	430KΩ	½			
R170	22Meg	½	504622	BTS-22Meg	
R171	1.5Meg	½	503515	BTS-1.5Meg	
R172	27KΩ	½	503327	BTS-27K	
R173	27KΩ	½	503327	BTS-27K	
R174	18KΩ	½	503318	BTS-18K	
R175	10Meg	½	503610	BTS-10Meg	
R176	270KΩ	½	503427	BTS-270K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R177	1Meg	½	503510	BTS-1Meg	
R178	3300Ω	½	503233	BTS-3300	
R179	68KΩ	½	503368	BTS-68K	
R180	82KΩ	½	503382	BTS-82K	
R181	430KΩ	½			
R182	100Ω	½	503110	BTS-100	
R183	470KΩ	½	503474	BTS-470K	
R184	270Ω	2	522127		
R185	2200Ω	5	73637	1 3/4A-2250	

Note: Some Models may use a single 120KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T8	117 VAC @ .725 A.	640 VCT .080 A.	5 VAC @ 2A.	6.3 VAC @ 3.4 A.	75566	PM-8410①	P-2951	PH-90 ①	R-11B ①	

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RCA Victor PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T9	10 KΩ CT	3.7Ω	510Ω CT	.6Ω	77323	A-3830 ①	A-2936 ①	RO-110 ①	S-15X ①	① Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	VIKING PART No.	QUAM PART No.	
SP1	12"	PM	3.7Ω	76093	12J11	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L35	FM Ant. Coil	0Ω		77313				Tapped
L36	Fil. Choke	0Ω		71942	19-3001	TV-189	4602	1.07 Microhenries
L37	FM RF Coil	0Ω		77314				
L38	FM Osc. Coil	0Ω		77315				Tapped
L39	AM Loop Ant.	.2Ω	1.4Ω	77332				
L40	AM RF Coil	65Ω	3.8Ω	77305				Sec. tapped @ 2.6Ω
L41	AM Osc. Coil	1.2Ω	7.5Ω	75569			71-Osc.	Includes core, pickup winding -2.2Ω
L42	1st. FM IF	.3Ω	.3Ω	75559	16-3471	FM-251	1451	
L43	1st. AM IF	10.5Ω	10.5Ω	75558				Tertiary winding -4.6Ω
L44	Fil. Choke	0Ω		71942	19-3001	TV-189	4602	1.07 Microhenries
L45	2nd. FM IF	1.2Ω	.4Ω	75560	16-3472	FM-251	1451	
L46	2nd. AM IF	7Ω	7Ω	76328	16-6770	BC-355	12-C6	
L47	Ratio Det.	1.2Ω	.2ΩCT	73743	17-3488	FM-252	1453	Tertiary winding-.2Ω

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	RCA Victor PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M9	75475	* 9-D	Q Q-33			96-0	0-1 or S-1 & 0-3 or S-3	* Complete Arm and Cartridge Assy.

ASTATIC AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

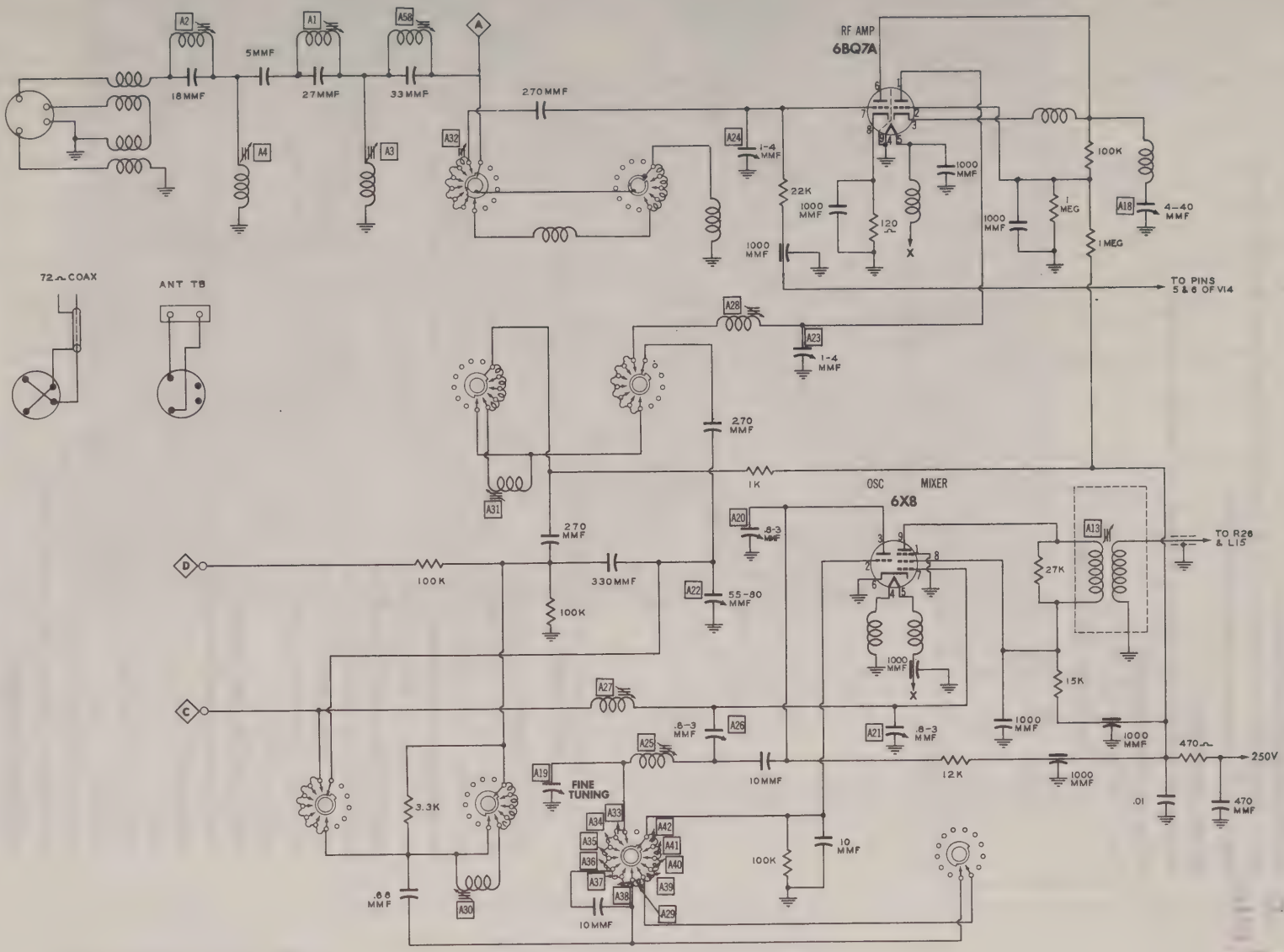
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	RCA Victor PART No.	WALCO PART No.	JENSEN PART No.	
M10	* 75496 ♦ 75497	W-44MGS or W-44MGA and W-44A or W-44S	M-74LP or M-75LP and M-74 or M-75	* 33 1/3 - 45 Needle ♦ 78 Needle

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M11	Pilot Lamp	11765	
M12	Dial Light	11765	2 used
M13	Tuning Cap.	77308	26-502MMF, 23-285MMF, 18-180MMF (Includes FM tuning)
M14	Switch	77476	Function Selector
	Dial Scale	77477	
	Escutcheon	77321	
	Pointer	77322	
	Knob	77811	Function Selector
	Knob	77810	Off/On Volume, Tone & Tuning (3 used)



ALTERNATE TUNER SCHEMATIC

RCA VICTOR
MODELS 21-D-346, U (Ch. KCS81E, D, RC1111A, RS141A)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the RF Tuner Oscillator circuit, may be accomplished by removal of the rear cover and supply power to set. Adjustments are located on top of tuner chassis. (Caution: Do not touch metal picture tube)

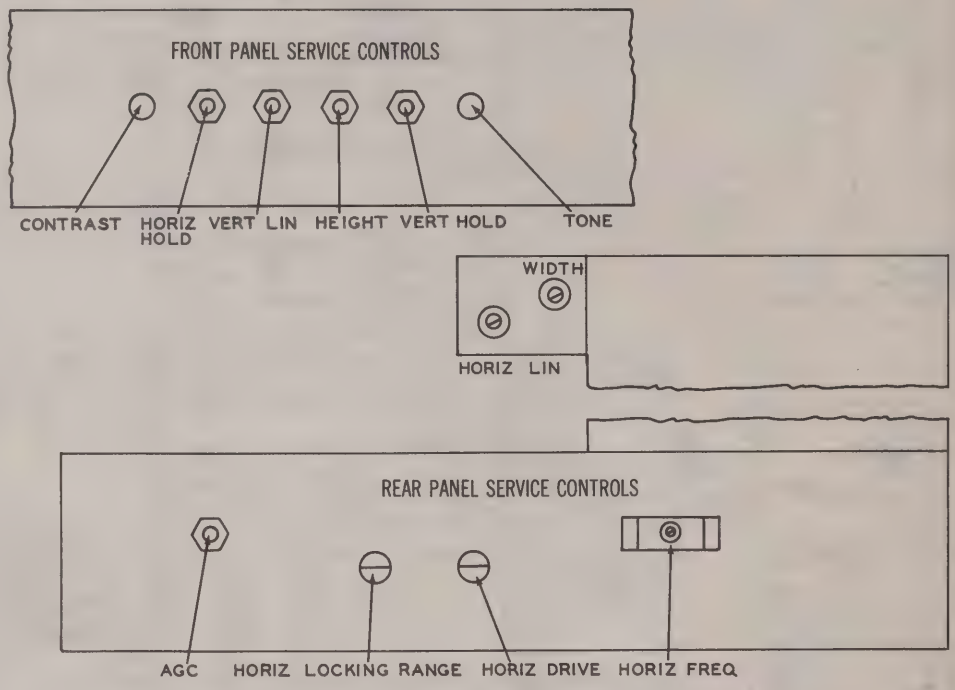
PICTURE TUBE SAFETY GLASS CLEANING

Remove 8 metal retainers from inside front of cabinet . Hold safety glass while removing metal frame. Remove safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - AGC CONTROL

Turn the AGC control fully counter clockwise, then clockwise until a very slight bend or change of bend in picture is noted. Then turn counter clockwise enough to remove the bend or change of bend. With very weak signals turn AGC control clockwise until snow in picture becomes more pronounced, then counter clockwise until the best signal to noise ratio is obtained. Adjustment should be made on a strong signal if possible.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug until the picture synchronizes horizontally. If synchronization cannot be obtained by the above adjustment see HORIZ.SWEEP CIRCUIT ADJUSTMENTS on page 19.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (L29) located on bottom of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM Focusing Assy. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

BUILT-IN ANTENNA TUNING

Built-in antenna can be adjusted from the rear of the cabinet. Adjust for a picture of maximum contrast and minimum ghost.

RME
MODEL 200 (UHF Conv.)

RME
MODEL 200 (UHF Conv.)

TRADE NAME	RME Model 200
MANUFACTURER	Radio Manufacturing Engineers, Inc., Peoria, Ill.
TYPE SET	AC Operated UHF Converter
TUBES (Two)	Types 6T4 (or) 6AF4 UHF Osc., 6BC5 IF Amp.
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .16 Amp. @ 117 Volts AC
TUNING RANGE	Channels 14 thru 83

THIS EQUIPMENT HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT SHOULD NOT BE REQUIRED IN THE FIELD.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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DATE 10 –53 SET 219 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		RME PART No.	STANDARD REPLACEMENT		
V1A	UHF Oscillator	6T4	6T4	7DK	
B	UHF Oscillator	6AF4	6AF4	7DK	
V2	IF Amplifier	6BC5	6BC5	7BD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RME PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/40-		BRD4415A		TCD48	TVA-2445	
B	40	150		40						
C2	.68				TCZ-.68		NP0K-R68			
C3	.68				TCZ-.68		NP0K-R68			
C4	2.2			SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C5	1-4				829-4					
C6	2.2			SI2.2NP0	TCZ-2.2		NP0K-2R2		5TCCB-V22	
C7	.68				TCZ-.68		NP0K-R68			
C8	1-4				829-4					
C9	68			SI68NP0	TCZ-68		NP0L-680		5TCC-Q68	
C10	68			SI68NP0	TCZ-68		NP0L-680		5TCC-Q68	
C11	68			SI68NP0	TCZ-68		NP0L-680		5TCC-Q68	
C12	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C13	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C14	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RME PART No.	IRC PART No.	
R1	3300Ω	½		BTS-3300	
R2	150Ω	½		BTS-150	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RME PART No.	IRC PART No.	
R3	680Ω	1		BTA-680	
R4	47KΩ	½		BTS-47K	Note

Note: Not used in all Models.

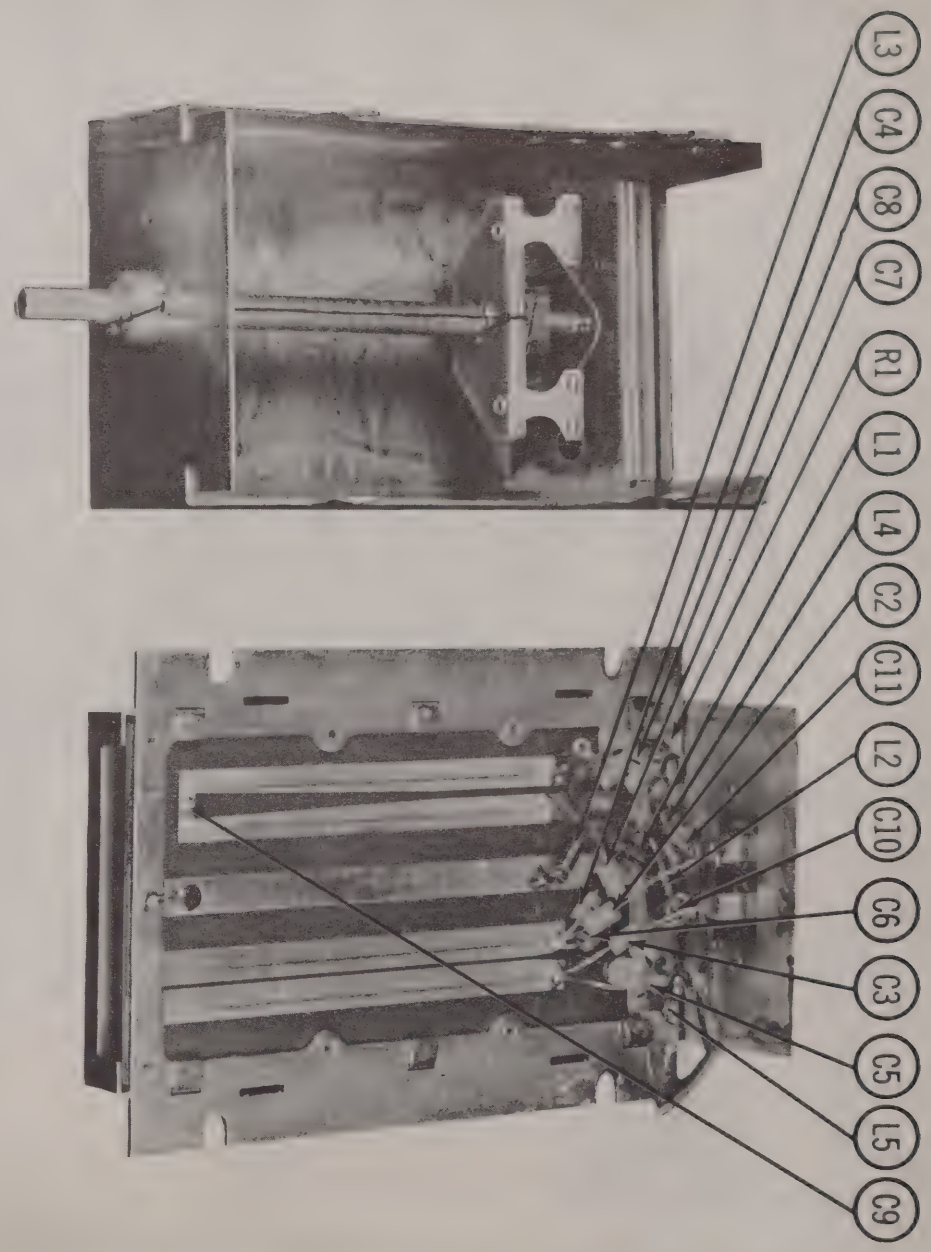
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RME PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @.16A	100V .038ADC	6.3VAC @1.07A						

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RME PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Fil. Choke	.2Ω						
L2	Fil. Choke	.2Ω						
L3	Cathode Choke	0Ω						
L4	RF Choke	0Ω						
L5	IF Coupling	0Ω						
L6	IF Input Coil	0Ω						Tapped
L7	IF Output Trans.	0Ω	0Ω					

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

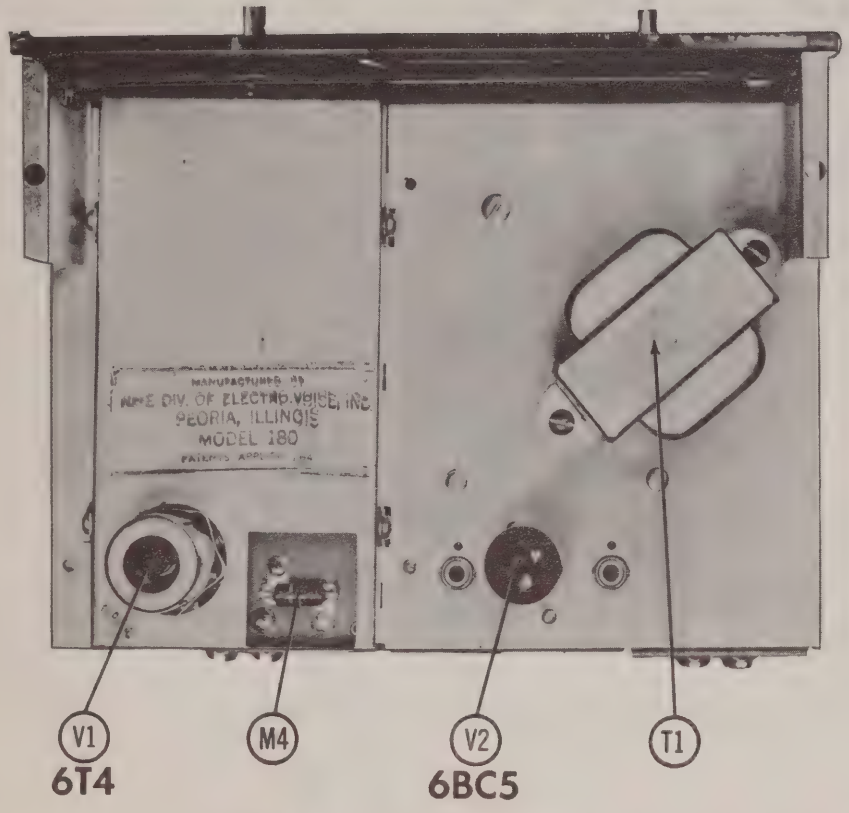
SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	RME PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.038ADC		NA5 ①	8J1 ①	1002A ①	6S65 ①	65 ①

① Drill new mounting hole.

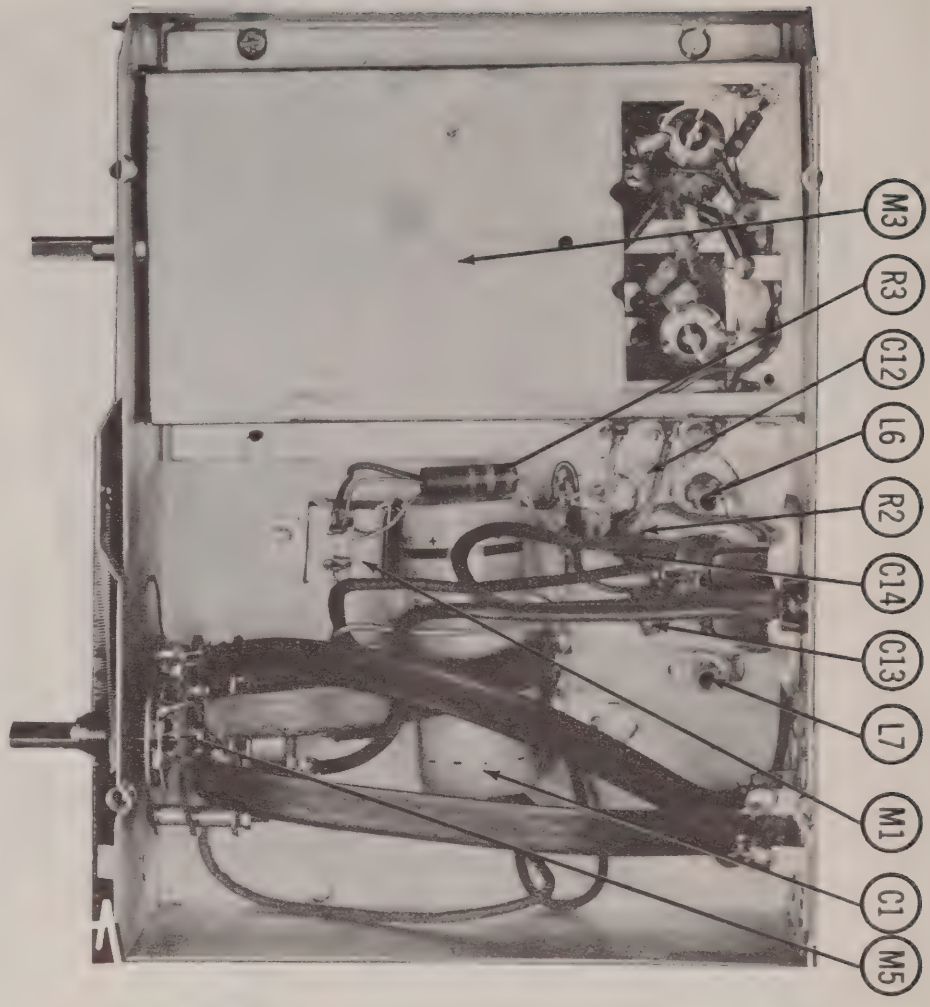
MISCELLANEOUS

ITEM No.	PART NAME	RME PART No.	NOTES
M2	Pilot Light		Type #NE2 (Not used in all Models.)
M3	RF Tuner		
M4A	Crystal Diode		UHF Mixer (Type 1N72)
B	Crystal Diode		UHF Mixer (Type CK710)
C	Crystal Diode		UHF Mixer (Type 1N82)
M5	Switch		Off/VHF/UHF Selector

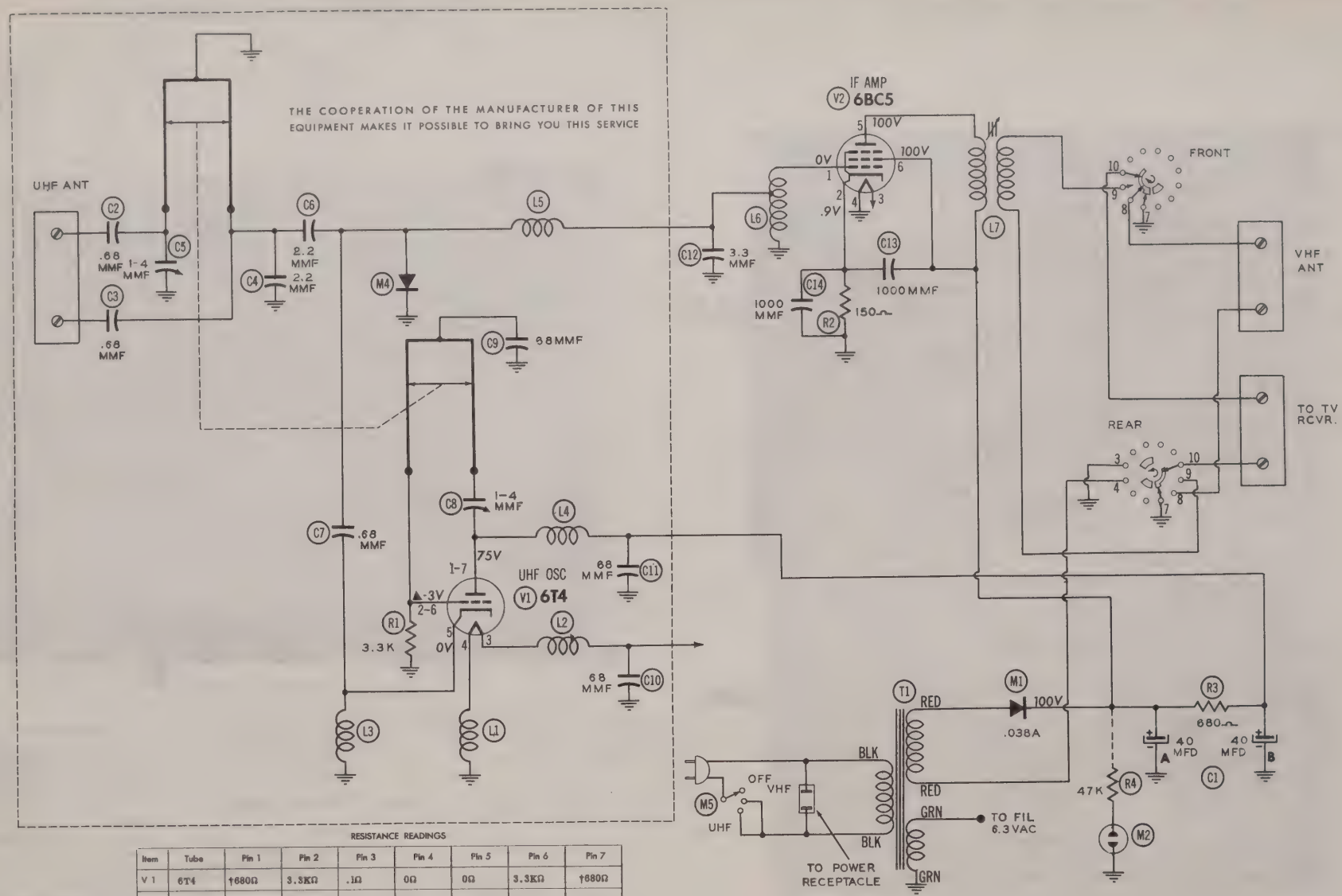


CHASSIS—TOP VIEW

CHASSIS—BOTTOM VIEW



RME MODEL 200



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6T4	†680Ω	3.3KΩ	.1Ω	0Ω	0Ω	3.3KΩ	†680Ω
V 2	6BC5	0Ω	150Ω	.1Ω	0Ω	†0Ω	†0Ω	150Ω

ALL MEASUREMENTS TAKEN WITH SWITCH IN UHF POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1.

219-8

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 Volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

SILVERTONE
MODELS 2215, 2217, 2218 (Ch. 528.238)

SILVERTONE
MODELS 2215, 2217, 2218 (Ch. 528.238)

TRADE NAME	Silvertone Models 2215, 2217, 2218 (Ch. 528.238)
SUPPLIER	Sears Roebuck & Co. 925 S. Homan Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC-DC (or) 3 Volts "A" Supply & 67½ Volts "B" Supply
RATING	.1 Amp. @ 117 Volts AC (or) 150MA @ 3 Volts DC & 10MA @ 67½ Volts DC
TUNING RANGE—BROADCAST	540-1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

SILVERTONE
MODEL 2215 (Ch. 528.238)

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	T18-307			CO57		FP309	R1054	
B	▲30	150								
C	100	10								
C2	20000		T15-240	BPD-02	DD-203	PTE6S2		PT612	5HK-S2	
C3	47		T15-229	SI47N750	TCN-47		N750K-470	NT-5447	5TCU-Q47	
C4	5000		T18-177	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C5	.1	200	T16-210	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C6A	150		♦17-105	SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
B	.002			BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C	150			SI150	D6-151	TM5T15	GP2K-151	UC-5315	5GA-T15	
D	.01			BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
E	.005			BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C7	2000		T15-241	BPD-002	D6-202	TM5D2	801-002	DC-522	5HK-D2	
C8	20000		T15-240	BPD-02	DD-203	PJ6S2		PT612	5HK-S2	
C9	20000		T15-240	BPD-02	DD-203	PJ6S2		PT612	5HK-S2	

♦ Items C6A, C6B, C6C, C6D, C6E, R9A, R9B, R9C, R9D are combined in one unit.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	T24-204	Q13-137	AG-63-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

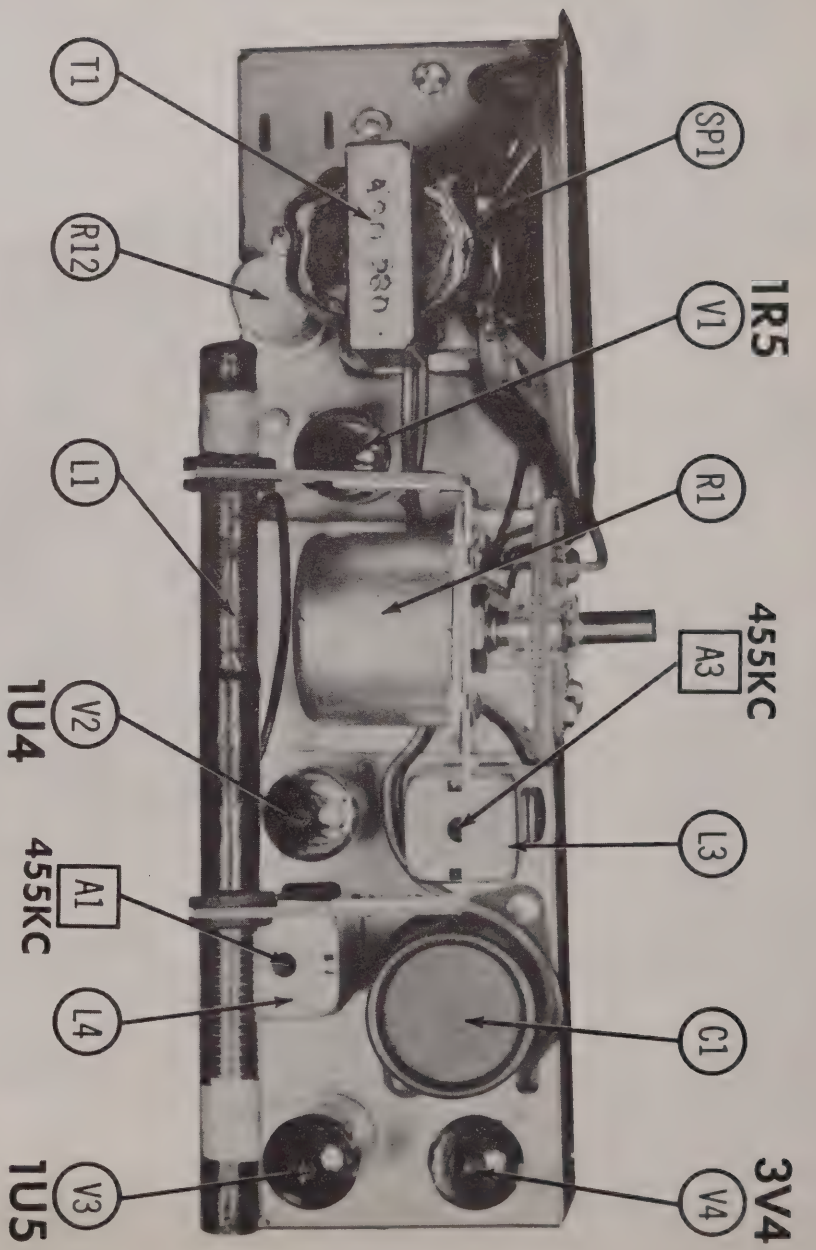
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	470Ω	½	T60-770	BTS-470	
R3	1500Ω	½	T60-729	BTS-1500	
R4	100KΩ	½	T60-727	BTS-100K	
R5	10Meg	½	T60-728	BTS-10Meg	
R6	47KΩ	½	T60-730	BTS-47K	
R7	27Ω	½	T60-690	BTS-27	
R8	2.2Meg	½	T60-726	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R9A	10Meg	½	♦T17-105	BTS-10Meg	
B	4.7Meg	½		BTS-4.7Meg	
C	1Meg	½		BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	
R10	1500Ω	½	T60-729	BTS-1500	
R11	160Ω	3	T60-725		
R12	2000Ω	10	T60-885	1 3/4A-2000	
R13	2200Ω	½	T60-714	BTS-2200	
R14	270Ω	½	T60-771	BTS-270	

♦ Items R9A, R9B, R9C, R9D, C6A, C6B, C6C, C6D, C6E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	9.2KΩ	3.4Ω	418Ω	.68Ω	T80-280	A-3329①	A-2900 ①	RO-16 ①	S-11X ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.4Ω	T79-408	35J4	3A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.5Ω		T82-79				
L2	Osc. Coil	1.8Ω	8.5Ω	T10-584	14-1074		71-Osc.	
L3	Input IF	20Ω	20Ω	T10-508	16-6758	BC-352	12-C1	
L4	Output IF	20Ω	20Ω	T10-508	16-6758	BC-353	12-C2	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.056ADC	T83-642	NA5	8J1	1002A	6S65	65

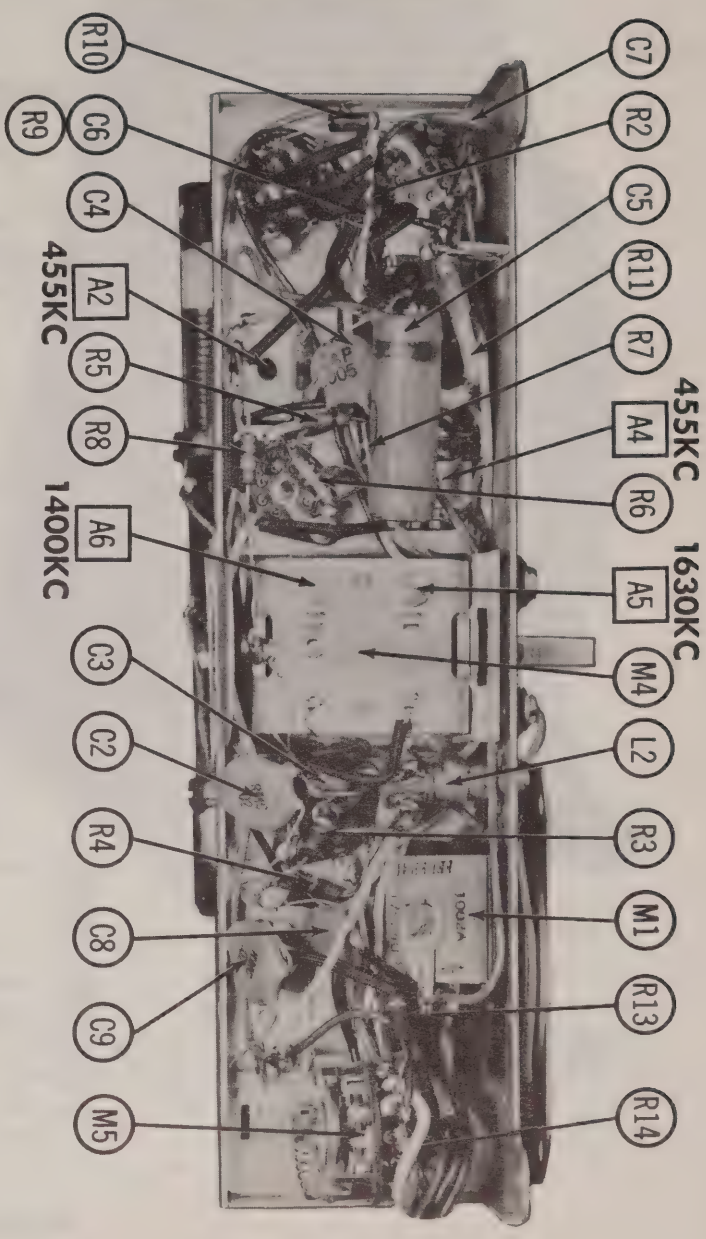
BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	1.5	6442	964			2IR			Two used in series
M3	67.5	6482		477			P45		

MISCELLANEOUS

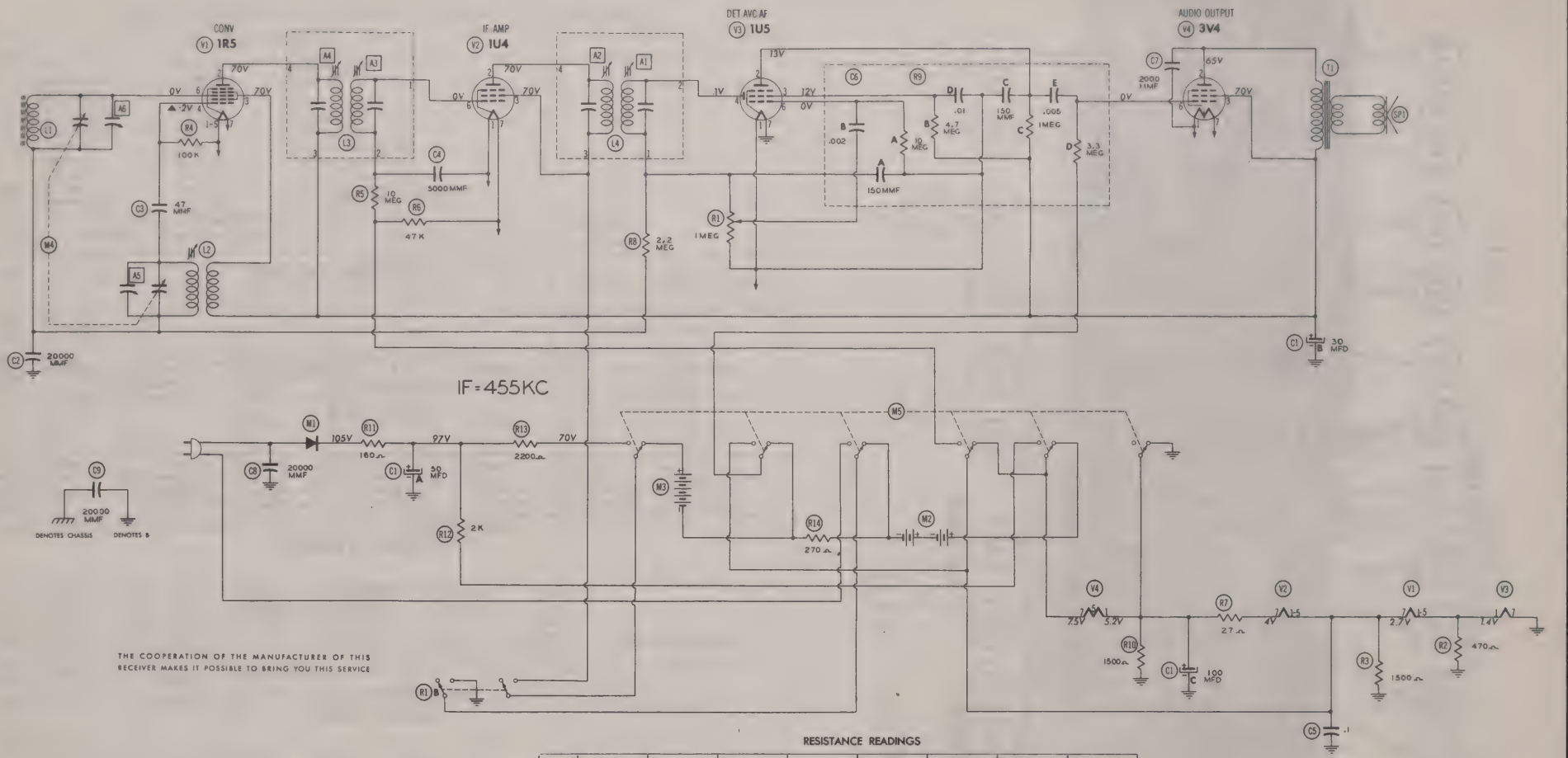
ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Tuning Cap.	T19-227	22-335MMF, 20-135MMF
M5	Switch	T69-187	AC/DC Battery Selector
	Cabinet	T42-543	Maroon, Model 2215
	Cabinet	T42-537	Green, Model 2217
	Cabinet	T42-545	Gray, Model 2218
	Back Cover	T42-544	Model 2215
	Back Cover	T42-538	Model 2217
	Back Cover	T42-546	Model 2218
	Dial Scale	T67-571	
	Disc (Control	T52-391	Off/On Volume
	Knob	T52-392	Tuning

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 2215 (Ch. 528.238)

SILVERTONE MODEL 2215 (Ch. 528.238)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†2.4KΩ	†2.4KΩ	100KΩ	*	3.2Meg	*
V 2	1U4	*	†2.4KΩ	†2.4KΩ	*	*	10Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	*	10Meg	*
V 4	3V4	*	†2.8KΩ	†2.4KΩ	†2.4KΩ	*	3.3Meg	*

V & R TAKEN WITH AC-DC-BATTERY SWITCH IN "AC-DC" POSITION
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

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219-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODEL 3032 (Ch. 528.252)

PROPERTY OF
L. F. [illegible] APPRENTICESHIP
3924 MERGE ST.
DENVER, COLORADO

SILVERTONE
MODEL 3032 (Ch. 528.252)

TRADE NAME	Silvertone Model 3032 (Ch. 528.252)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with 3 Speed Manual Record Player
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 8 (grid) of 12SA7 (V1). Low side to B-.	455KC (400%Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	Adjust for maximum output. If range of A5 is insufficient adjust trimmer at opposite end of stator plates.
3.		Loop	1400K C	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver Adjust for maximum output.

To set pointer turn tuning gang fully closed and set dial so that index mark on cabinet is 1/8" to right of "55" on dial.

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PARTS LIST AND DESCRIPTIONS

SILVERTONE
MODEL 3032 (Ch. 528.252)

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	T18-304	PRS150/50-30		EDL-5315		2N520	TVA-2450	Red Yellow
B	30	150								
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		T15-229	BPD-000047	D6-470		GP1K-470	UC-5447	5TCC-Q47	
C4	.05	400	T16-189	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C5A	220		T17-104	SI220	D6-221	5W5T25	GP2K-221	UC-5322	34C3	
B	.002			BPD-002	MD-202	TM5D2	811-002	DC-522		
C	220			SI220	D6-221	5W5T25	GP2K-221	UC-5322		
D	.005			BPD-005	MD-502	TM5D5	811-005	DC-525		
C6	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.005	600	T16-190	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C8	.05	400	T16-189	489ZX-05		PJ4S5		PT415	4TM-S5	
C9	.05	400	T16-189	P489-05		PJ4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	T24-195	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

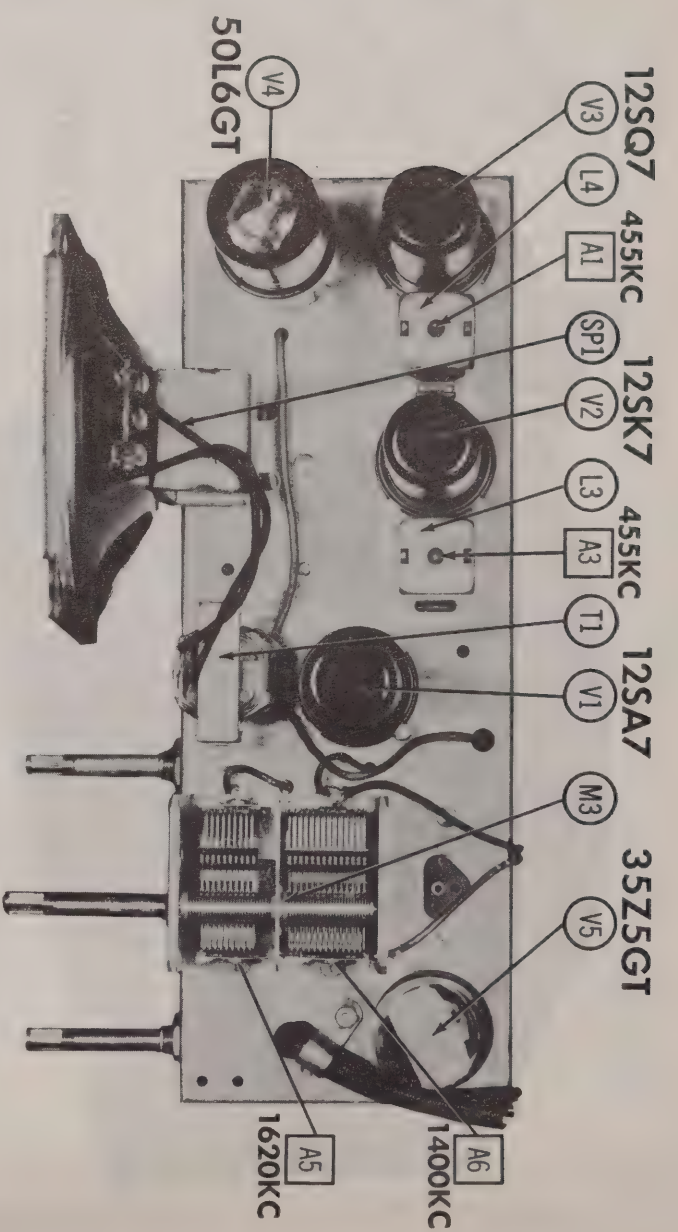
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	22KΩ	½	T60-659	BTS-22K	
R3	2.2Meg	½	T60-726	BTS-2.2Meg	
R4	2.2Meg	½	T60-726	BTS-2.2Meg	
R5	47KΩ	½	T60-730	BTS-47K	
R6	10Meg	½	T60-728	BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R7	470KΩ	½	T60-731	BTS-470K	
R8	470KΩ	½	T60-731	BTS-470K	
R9	180Ω	½	T60-774	BTS-180	
R10	1000Ω	1	T60-732	BTA-1000	
R11	27Ω	½	T60-690		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.5KΩ	3.3Ω	168Ω	.44Ω	80-282	A-3876	A-2928	RO-302	S-1X	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω	79-411	ST-112 Mod. P4-X	4A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2.8Ω		T82-71				
L2	Osc. Coil	1.5Ω	7.5Ω	T10-572	14-1074		70-Osc.*	
L3	Input IF	20Ω	22Ω	T10-508	16-6758	BC-352	12-C1	
L4	Output IF	22Ω	22Ω	T10-479	16-6758	BC-353	12-C2	

* Disregard tap on secondary winding.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1		*P-16L3						* Complete tone arm and cartridge assy.

PHONO NEEDLE

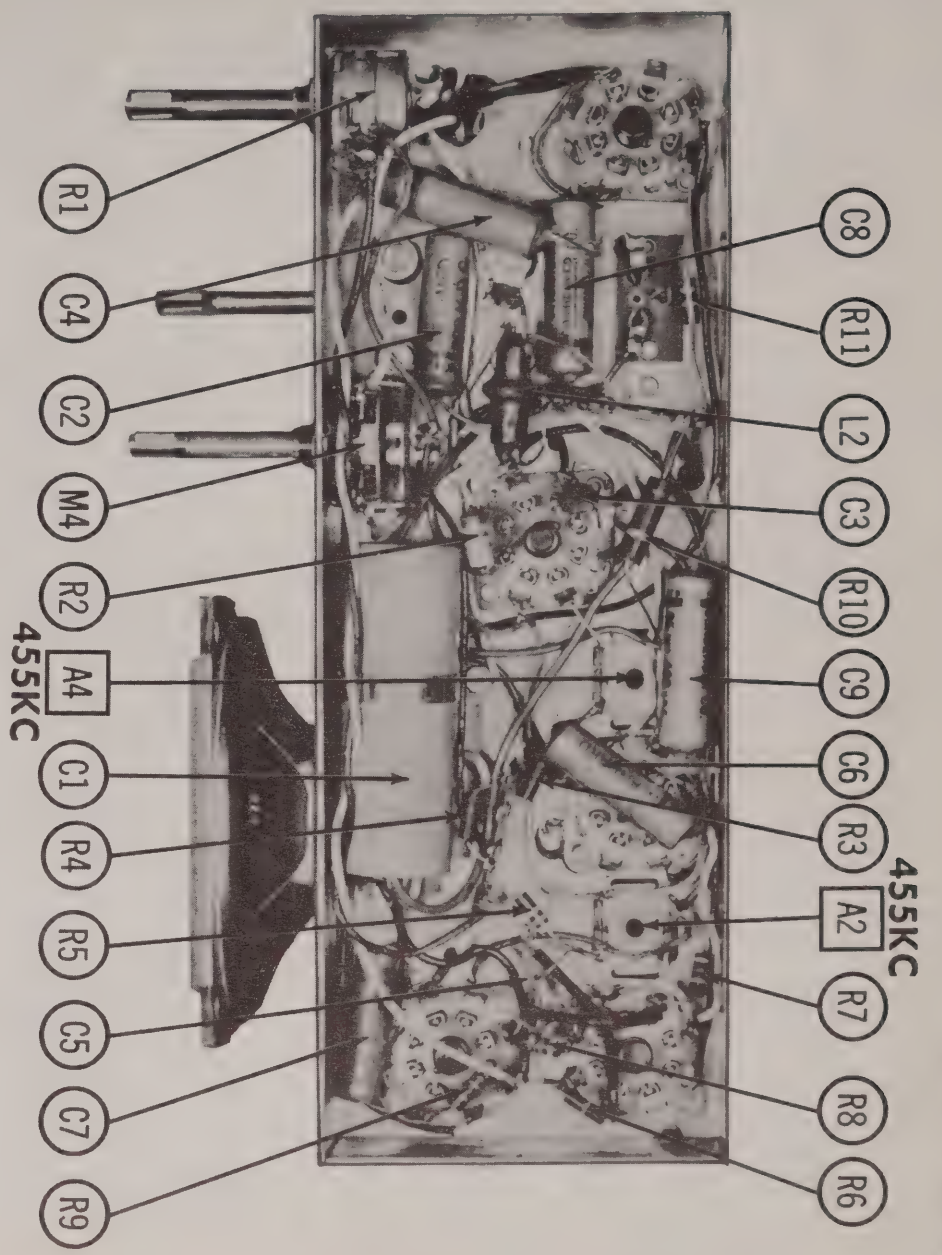
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	SILVERTONE PART No.	WALCO PART No.	JENSEN PART No.	
M2	T83-772	WS-400-2	J-752	

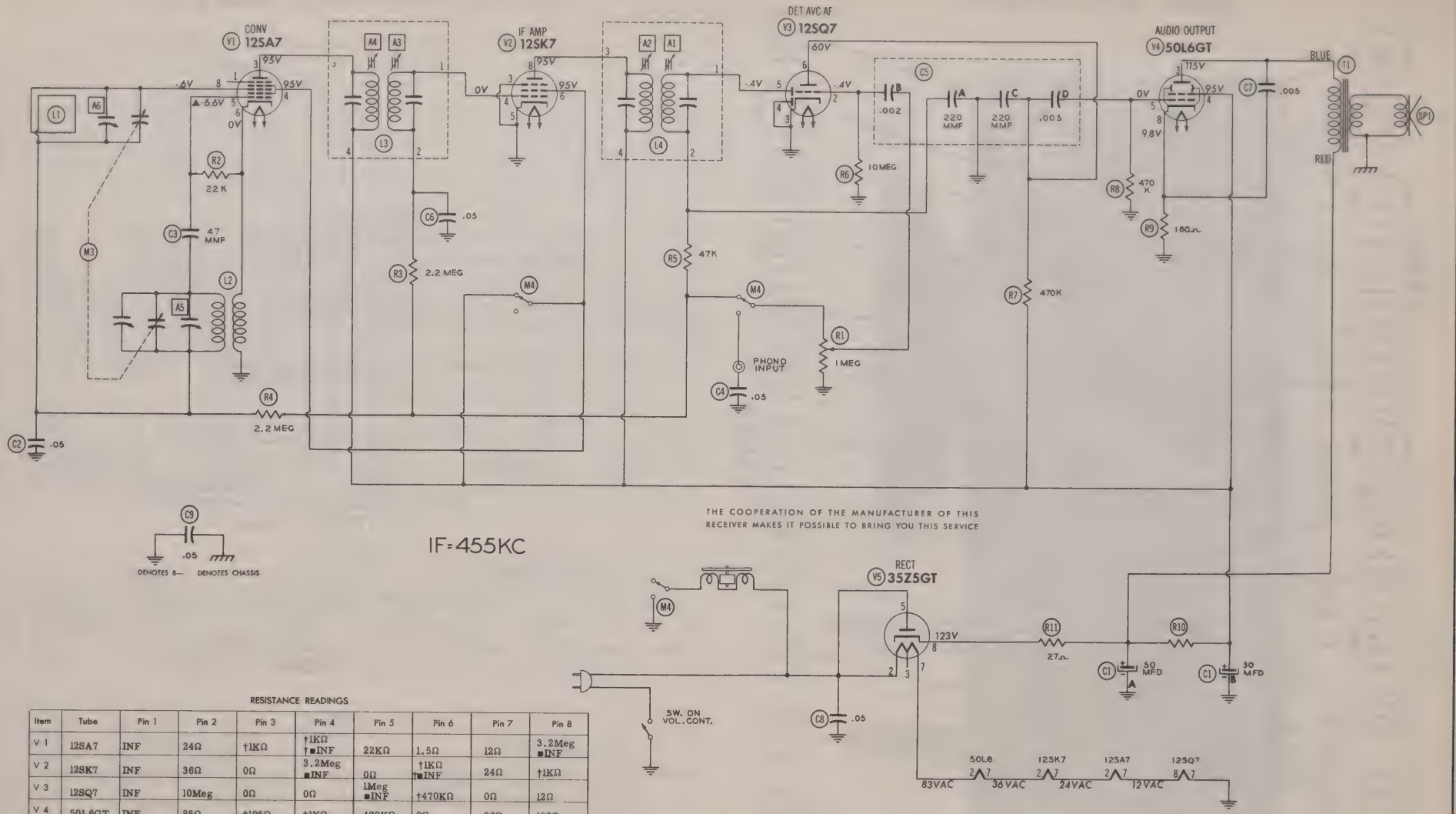
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Capacitor	T19-224	44-482MMF, 34-195MMF
M4	Switch	T69-189	Radio-Phono Selector
	Cabinet	T42-566	
	Baffle	T44-15	
	Knob	T52-324	Tuning
	Knob	T52-407	Off/On/Volume
	Knob	T52-408	Radio-Phono Selector

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 3032 (Ch. 528.252)



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	INF	24Ω	†1KΩ	†1KΩ †■INF	22KΩ	1.5Ω	12Ω	3.2Meg ■INF
V 2	12SK7	INF	36Ω	0Ω	3.2Meg ■INF	0Ω	†1KΩ †■INF	24Ω	†1KΩ
V 3	12SQ7	INF	10Meg	0Ω	0Ω	1Meg ■INF	†470KΩ	0Ω	12Ω
V 4	50L6GT	INF	85Ω	†195Ω	†1KΩ	470KΩ	0Ω	36Ω	180Ω
V 5	35Z5GT	INF	120Ω	113Ω	INF	120Ω	INF	85Ω	100KΩ

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION UNLESS OTHERWISE SPECIFIED
■ MEASURED IN "PHONO" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V5.

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219-10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

STRATFORD MODELS 916, 917, 920, 921, 924, 927, 1016, 1017, 1020, 1024, 1027 (Ch. E6353, C, 6353, C, E6453, C, 6453, C, 6753C)

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MODEL 917

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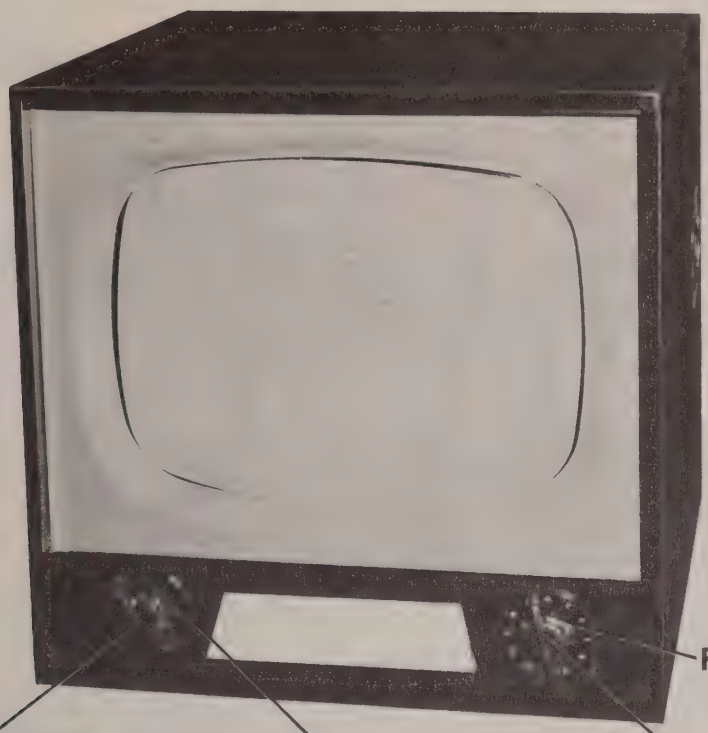

STRATFORD MODELS
916, 917, 920, 921, 924, 927,
1016, 1017, 1020, 1024, 1027 (Ch. E6353,
C, 6353, C, E6453, C, 6453, C, 6753C)

STRATFORD MODEL 917 (Ch. 6353C)

TRADE NAME	Stratford Models	Chassis
	916, 917, 920, 921	E6353, E6353C, 6353, 6353C
	924	E6453, E6453C, 6453, 6453C
	927	6753C
	1016, 1017, 1020, 1021	E6353, E6353C, 6353, 6353C
	1024	E6453, E6453C, 6453, 6453C
	1027	6753C

MANUFACTURER Telequip Radio Co., 2559 West 21 St. Street, Chicago 8, Illinois.
TYPE SET Television Receiver
TUBES Twenty

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.5 Amp @ 117 Volts AC
TUNING RANGE-Channels 2 thru 13, Video IF 26.1MC, Sound IF 21.6MC (Intercarrier)

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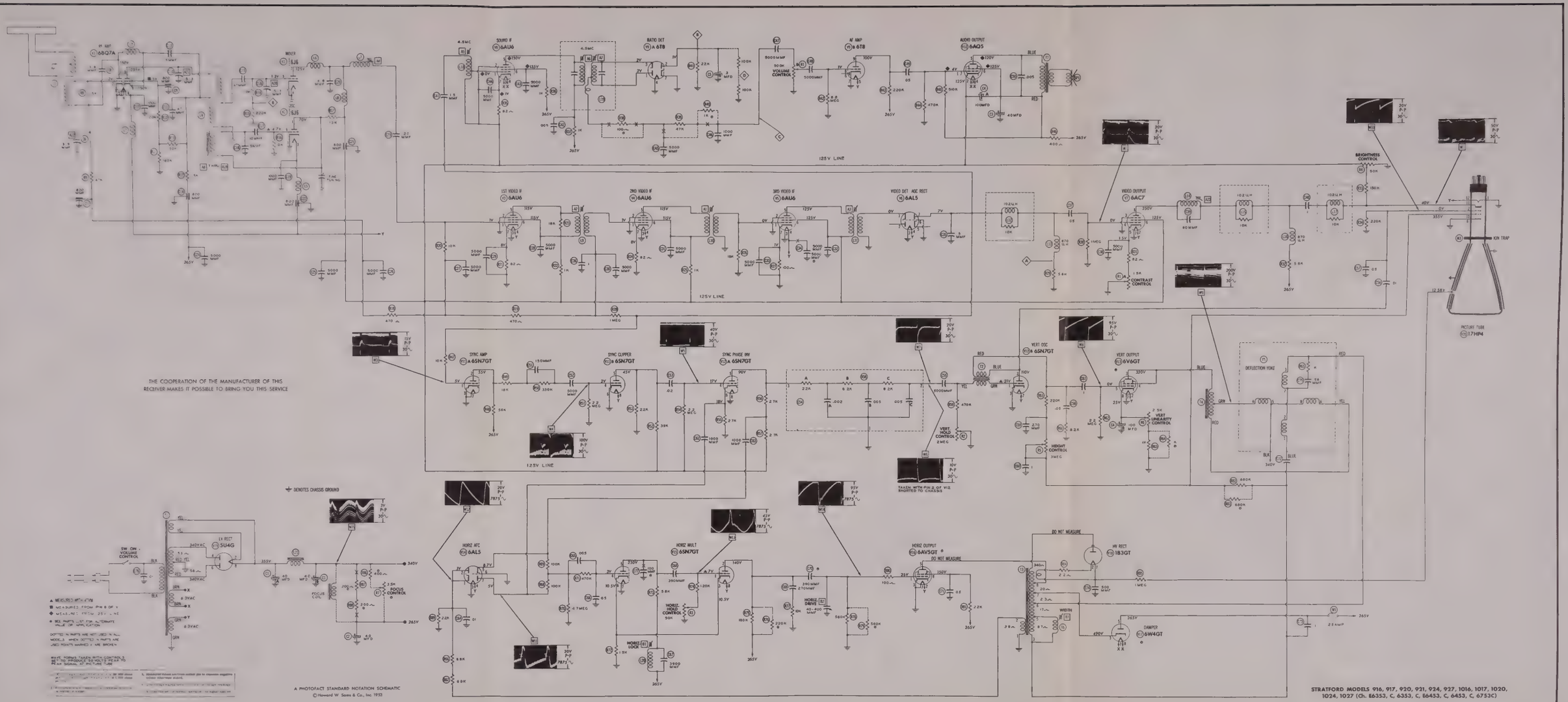
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DENOTES CHASSIS GROUND
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L. F. BLANKINS
3924 MEADE S
DENVER, COLORADO

CHASSIS TOP VIEW

STRATFORD MODELS 916, 917, 920, 921, 924, 927, 1016, 1017, 1020, 1024, 1027 (Ch. E6353, C, 6353, C, E6453, C, 6453, C, 6753C)

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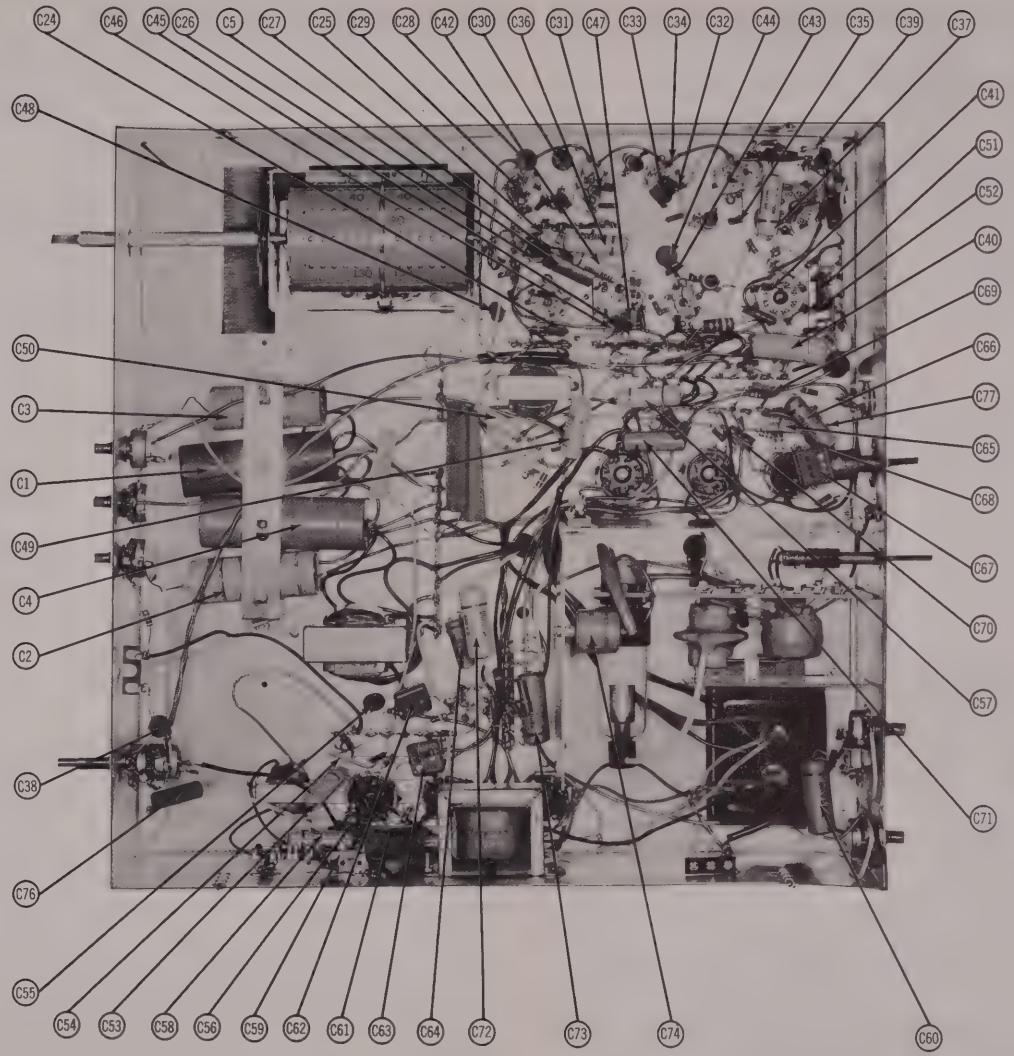

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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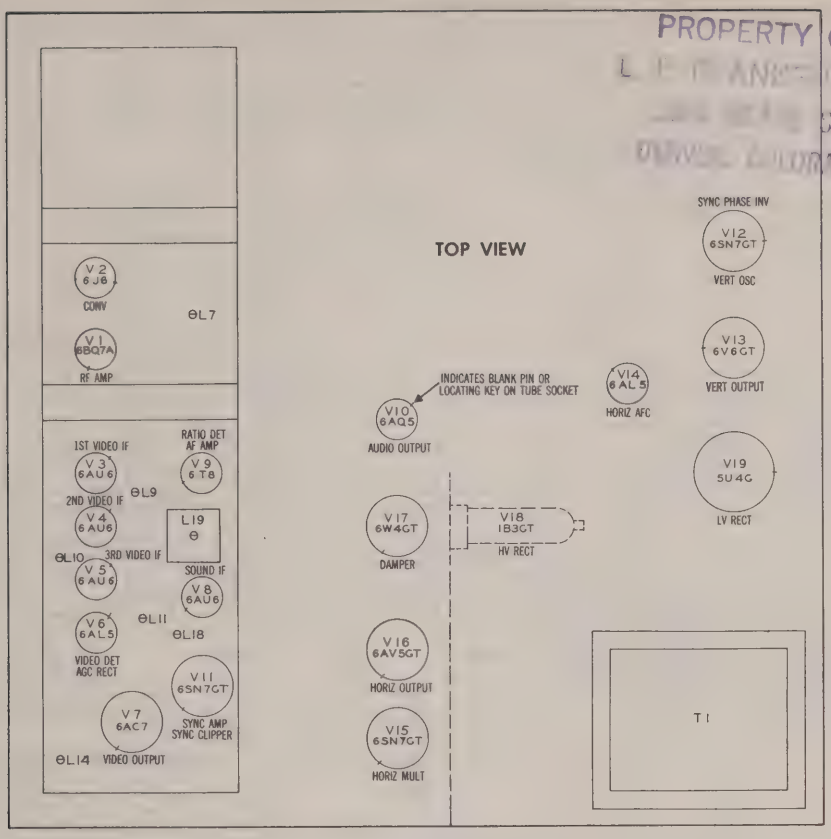


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V20
Has pic, no sound - V8, V9, V10

SYNC FAILURE
No vert. sync - V12, V13
No horiz. sync - V12, V14, V15
No vert. or horiz. sync - V11, V12

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V20 Fuse (M1)
No vertical deflection - V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19
Vert. off freq. - V12, V13
Horiz. off freq. - V12, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizonal multivibrator to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.
This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 1½ volt battery to the junction of R28 and C36 and the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	23MC	Any	Vert. Amp. thru 10KΩ isolating resistor to point (A). Low side to chassis.	A1	Adjust for maximum marker amplitude.
2.	"	"	"	25.7MC	"	"	A2	"
3.	"	"	"	26.1MC 21.6MC	"	"	A3, A4	Adjust for maximum overall response as in Fig. 1. If necessary retouch A1 thru A4.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A5, A6	Adjust for maximum deflection. If reading exceeds -8 volts, reduce generator output.
5.	"	"	"	"	DC probe to point (C). Common to point (D).	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A5, A6	Disconnect stabilizing capacitor (C5). Adjust for maximum amplitude and symmetry as in Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A7	Reconnect stabilizing capacitor (C5). Adjust A7 so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Remove the channel selector and fine tuning knobs. The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 27KΩ to point (A). Low side to chassis.	A8	Adjust to place sound marker as in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A9	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A10	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A11	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A12	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A13	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A14	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A15	
			79MC (10MCSwp)	77.25MC 81.75MC	5		A16	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A17	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A18	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A19	

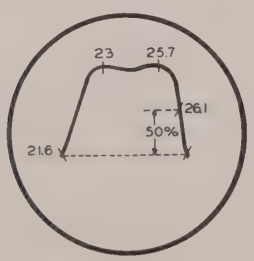


FIG. 1

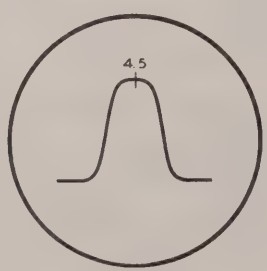


FIG. 2

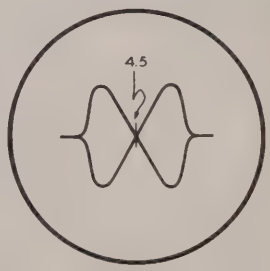


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (E). Low side to chassis.	A20 A21 A22	Adjust for response curve similar to Fig. 6. with markers above 90%.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	"	
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

PROPERTY OF
3924 [illegible] ST.
DENVER, COLORADO

4.5MC TRAP ALIGNMENT

Tune in a TV station and examine the picture for evidence of 4.5MC interference. If any is noted adjust A23 to minimize it.

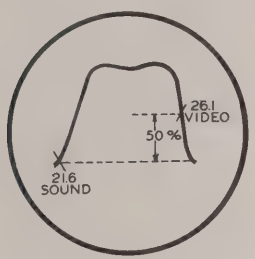


FIG. 4

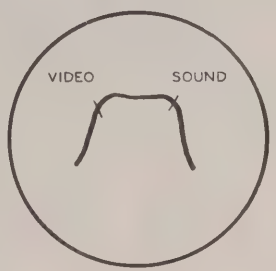


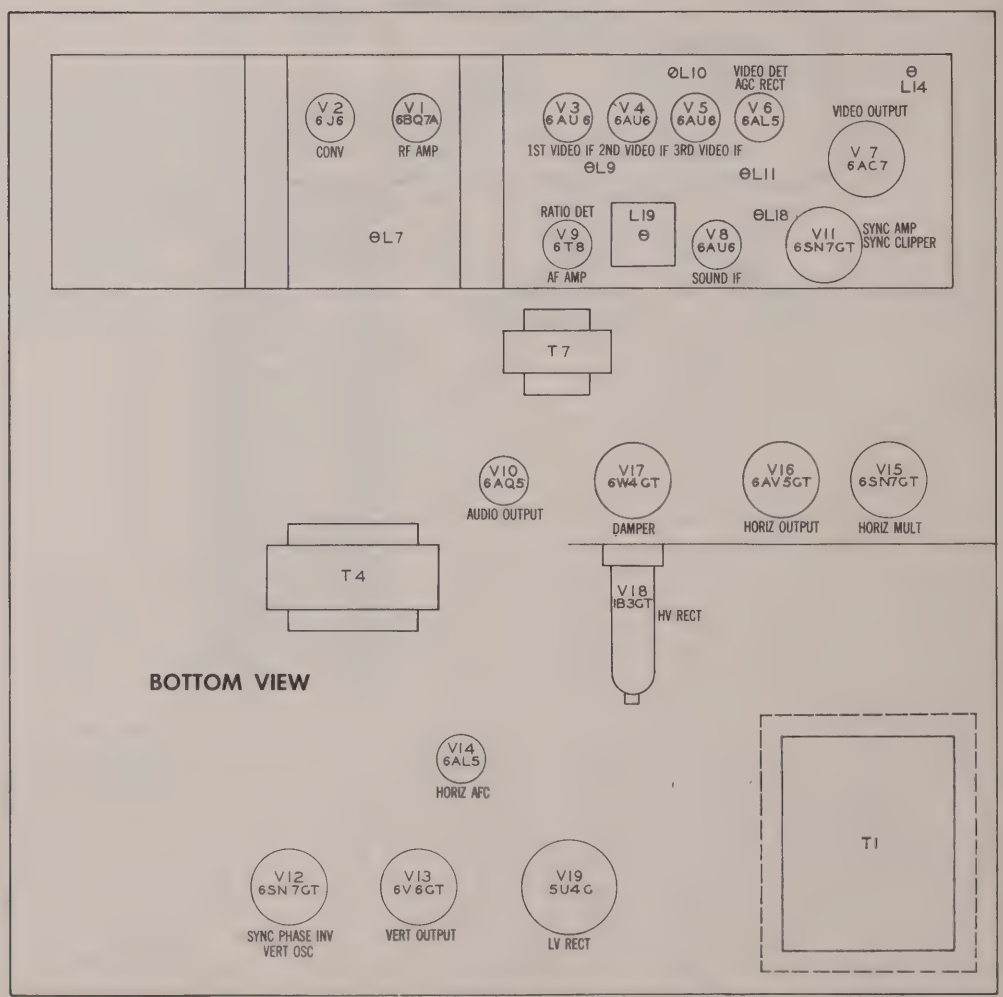
FIG. 5

STRATFORD MODELS 916, 917, 920, 921, 924, 927, 1016, 1017, 1020, 1024, 1027 (Ch. E6353, C, 6353, C, E6453, C, 6453, C, 6753C)

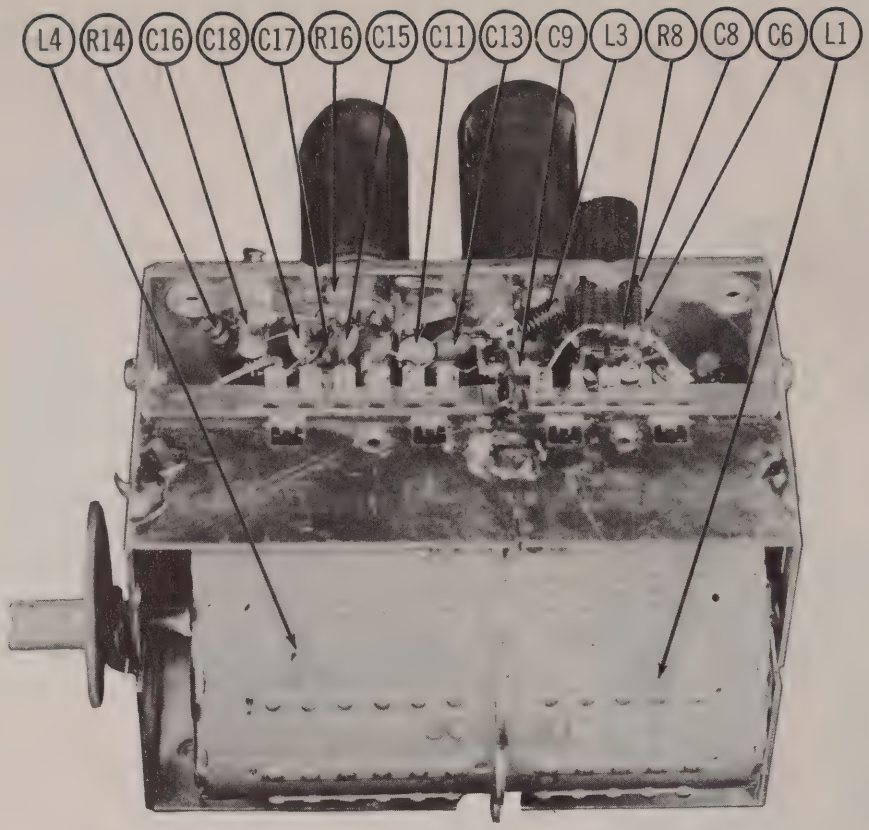
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	1 Meg	0Ω	.1Ω	0Ω	†2KΩ	†170KΩ	INF	0Ω
V 2	6J6	♦15KΩ	♦2.3Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6AU6	1 Meg	0Ω	0Ω	.1Ω	♦1KΩ	♦1KΩ	82Ω		
V 4	6AU6	1 Meg	0Ω	0Ω	.1Ω	♦1KΩ	♦1KΩ	82Ω		
V 5	6AU6	.3Ω	0Ω	0Ω	.1Ω	♦0Ω	♦0Ω	100Ω		
V 6	6AL5	.3Ω	INF	0Ω	.1Ω	INF	0Ω	5.6KΩ		
V 7	6AC7	0Ω	.1Ω	0Ω	1 Meg	440Ω	♦0Ω	0Ω		
V 8	6AU6	♦2.4KΩ	♦0Ω	INF	INF	†1.5KΩ	†1.5KΩ	♦82Ω		
V 9	6T8	INF	22KΩ	INF	0Ω	.1Ω	INF	0Ω	6.8Meg	†220KΩ
V 10	6AQ5	†250KΩ	25KΩ	INF	INF	†1.1KΩ	†865Ω	†250KΩ		
V 11	6SN7GT	16KΩ	†56KΩ	0Ω	2.2Meg	♦17.5KΩ	0Ω	0Ω	.1Ω	
V 12	6SN7GT	1.2Meg	■1.9Meg	0Ω	♦2.2Meg	♦5.4KΩ	2.7KΩ	.1Ω	0Ω	
V 13	6V6GT	0Ω	.1Ω	†1.4KΩ	†1.4KΩ	2.2Meg	220KΩ	0Ω	1.6KΩ	
V 14	6AL5	8KΩ	8KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	130KΩ	†180KΩ	1.5KΩ	5.1Meg	†6KΩ	1.5KΩ	0Ω	.1Ω	
V 16	6AV5GT	560KΩ	.1Ω	0Ω	INF	■20Ω	INF	0Ω	†22KΩ	
V 17	6W4GT	INF	INF	INF	INF	†465Ω	INF	INF	INF	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ■360Ω
V 19	5U4G	INF	100KΩ	†65Ω	53Ω	INF	58Ω	INF	100KΩ	
V 20	17HP4	0Ω	220KΩ	Pin 6 0Ω	Pin 10 ■680KΩ	Pin 11 170KΩ	Pin 12 .1Ω			

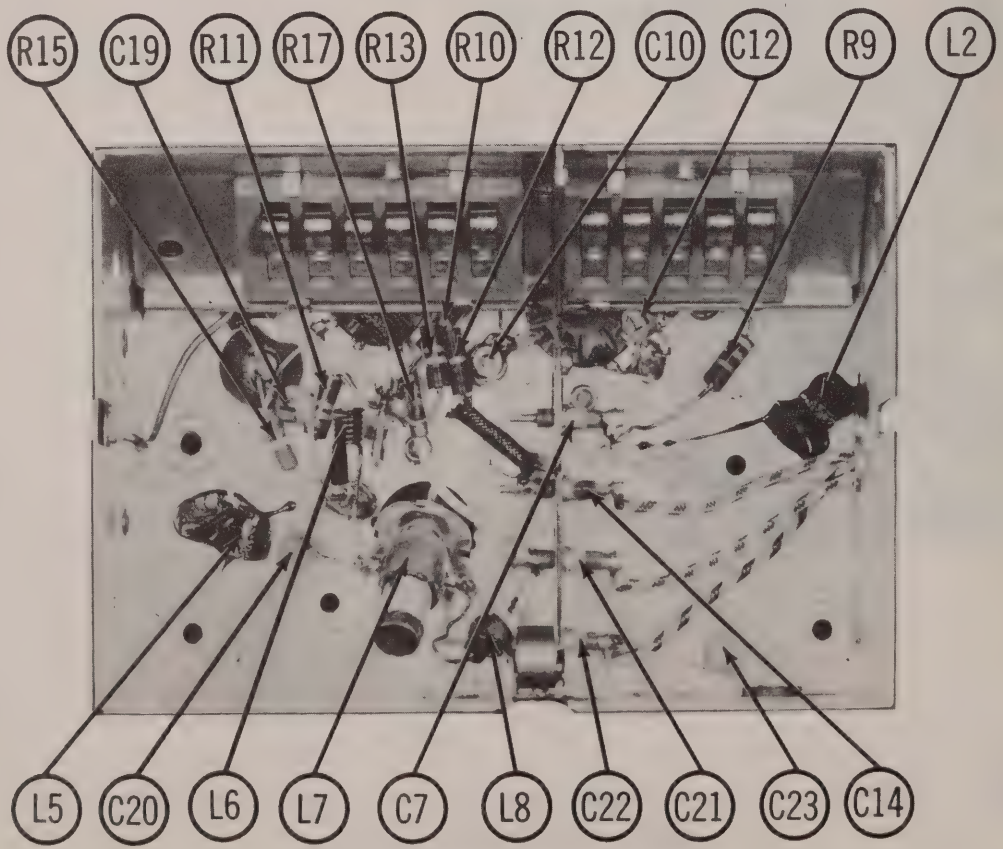
† MEASURED FROM PIN 8 OF V19.
♦ MEASURED FROM 125VDC LINE.
■ MEASURED FROM PIN 3 OF V17.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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L. F. D
3
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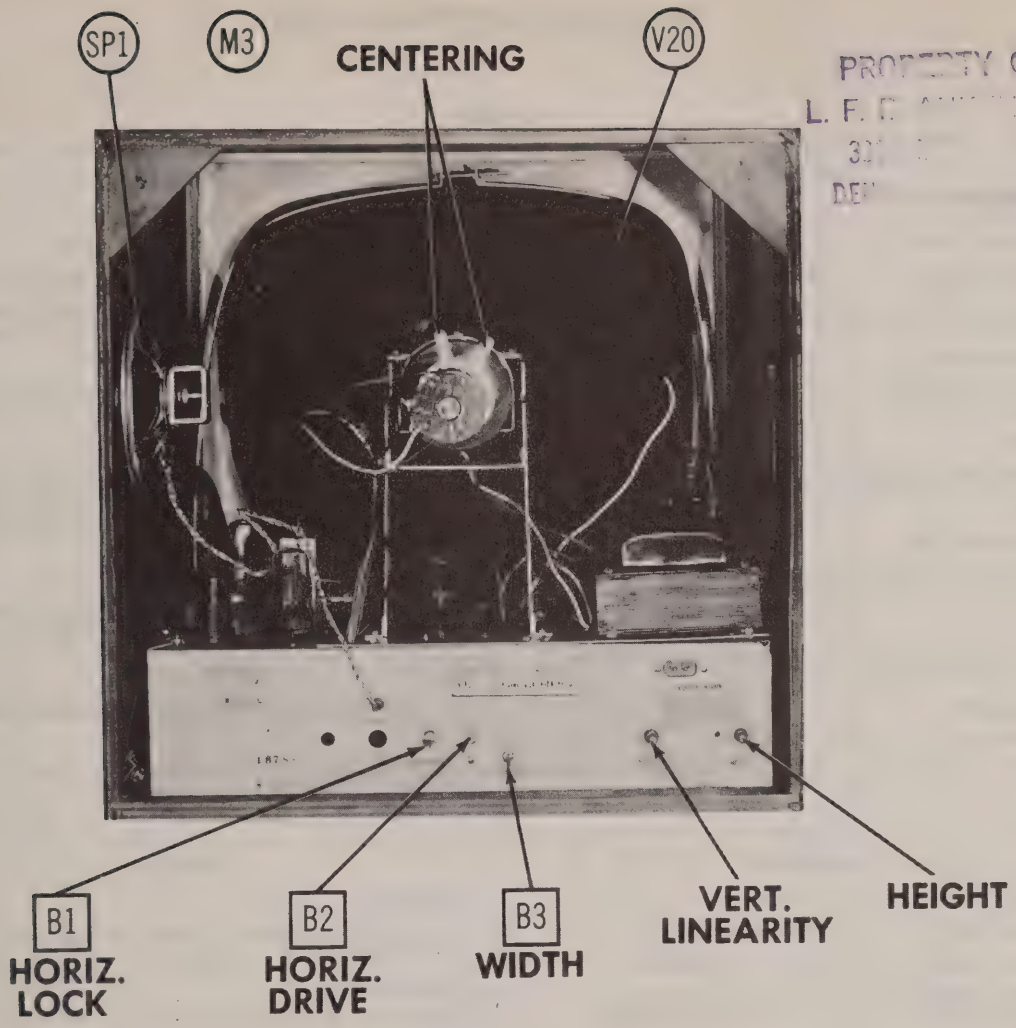


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV signal, preferably a test pattern.

Turn the horizontal hold control to its mid-range setting. Adjust the horizontal lock slug (B1) until the picture syncs horizontally.

Turn the horizontal drive control (B2) counter clockwise as far as possible without the presence of vertical white lines or compression in the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the mask horiz ontally.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "Loss of High Voltage"

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17 and V19. Check adjustment of width (B3) and horiz. drive (B2). Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check C71, C72, C73, T3, T5A and other associated components.	Check C68, C69, C70 and other associated components.

DRIVE LINES

Check by substitution V15, V16 and V17. Check adjustment of horiz. drive (B2). Check C69, C70, C72, C73, T3, T5A and other associated circuit components.

COMPRESSED LEFT SIDE

Check by substitution V15, V16 and V17. Check adjustment of width (B3) and horiz. drive (B2). Check C71, T3, T5A and other associated components.

FOLDS

Check by substitution V15, V16 and V17. Check C72, C73, C71, T3, T5A and other associated components.

XMAS TREE EFFECT

Check by substitution V15. Check C67, C68 and L20.

VERTICAL

LOSS OF SWEEP

Check by substitution V12 and V13. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check T4, T5B and other associated components.	Check T2, C58, C59, C61, C60 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check adjustment of height and vertical linearity controls. Follow procedure outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check adjustment of height and vertical linearity controls. If sufficient sweep is obtained and picture is compressed, recenter raster and readjust height and vertical linearity controls. If Bottom is compressed and not enough sweep is present substitute V12 and V13. Check associated circuit components.

COMPRESSED AT TOP

Check adjustment of height and vertical linearity controls. Recenter raster if necessary. Check by substitution V12 and V13. Check components associated with V12B and V13.

FOLDS

Check by substitution V12 and V13. Check circuit components especially T2, T4 and T5B.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V14 and V15. Check waveform at W11.

If Satisfactory	If Unsatisfactory
Check C64, R66, R67 and T3. Check other components associated with V14.	Check C62, C63, R68, R69 and other associated components.

CRITICAL HOLD

Check by substitution V14 and V15. Check components associated with these stages.

PULLING PICTURE

Check by substitution V14, V15 and V16. Check C65, C66 and other associated components. Check sync stages for 60 cycle modulation. Check AGC network for improper operation.

VERTICAL

LOSS OF SYNC

Check by substitution V11 and V12. Check vertical integration network and all sync coupling capacitors.

CRITICAL HOLD

Follow procedure outlined under "Loss of Sync".

TRIGGERING

Check by substitution V11 and V12. Check circuit near these stages for filament lead dress. Dress all filament leads away from grid load resistors and coupling capacitors.

VIDEO

LOSS OF VIDEO

Substitute V7. Check associated circuit components especially L15, L16, L17, C40, R32 and R31. Check picture tube.

SOUND BARS

Check local oscillator alignment. Check adjustment of 4.5 MC trap (A23).

NEGATIVE PICTURE

Check by substitution V6 and V7. Check components associated with these stages for failure or change of value. Check video IF stages for weak tubes and/or component failure. Check AGC network.

POOR CONTRAST

Check by substitution V6 and V7. Check assoicated components especially bypass and coupling capacitors.

SMEAR

Check by substitution V6 and V7. Check C37 and C40. Check R31 and R32 for change of value. Check L12 and L15. Check picture tube and other associated components.

ONE WIDE BLACK BAR ACROSS PICTURE

Check tuner, video IF, video detector and video amplifier tubes for heater to cathode leakage.

ALTERNATE TUNER SCHEMATIC

ALTERNATE TUNER MODEL TV 279

PROPERTY OF

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STRATFORD PART No.	STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier		6BQ7A	9AJ	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6AU6	7BK	
V4	2nd. Video IF Amp.		6AU6	7BK	
V5	3rd. Video IF Amp.		6AU6	7BK	
V6	Video Detector-AGC Rectifier		6AL5	6BT	
V7	Video Output		6AC7	8M	
V8	Sound IF Amp.		6AU6	7BK	
V9	Ratio Detector-AF Amplifier		6T8	9E	
V10	Audio Output		6AQ5	7BZ	
V11	Sync Amplifier Sync Clipper		6SN7GT	8BD	
V12	Sync Phase Inv.-Vert. Oscillator		6SN7GT	8BD	
V13A	Vert. Output		6V6GT	7S	
B	Vert. Output		6W6GT	7S	
V14	Horiz. AFC		6AL5	6BT	
V15	Horiz. Mult.		6SN7GT	8BD	
V16A	Horiz. Output		6AV5GT	8CM	
B	Horiz. Output		6CD8G	6CD8G	8BT Used on Chassis 6753C, 6453, 6455C
V17A	Damper		6W4GT	4CG	
B	Damper		6AX4GT	4CG	
C	Damper		6U4GT	4CG	
V18	HV Rectifier		1B3GT	3C	
V19	LV Rectifier		5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: STRATFORD PART No.	SYLVANIA PART No.	GENERAL ELECTRIC TYPE No.	RTMA BASE TYPE	NOTES
V20	17RP4	17RP4 17RP4	17EP4 17RP4	12C 12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: STRATFORD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	450		PR8450/40-		BBRD4445		2N537	TVA-2740	Red
B	40	450		40						Red
C2	40	450		PR8450/40		BR4045A		TC78	TVA-1712	
C3	40	450		PR8450/40		BR4045A		TC78	TVA-1712	
C4A	100	300				BO60		2N539	R1389	
B	100	50								Red
C5	3	50		PR8150/4		BBR-3-50T		TC30	TVA-1402	Green
C6	3-9				829-10					
C7	800			CN-1-001	MFT-1000					
C8	3.9								503C-D1	
C9	800			CN-1-001	MFT-1000				503C-D1	
C10	.5-3				829-3			CT565A		
C11	47			BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C12	1000			BPD-001	DD-102	TM6D1	801-001	DC-521	5HK-D1	
C13	1.5			811.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C14	800			CN-1-001	MFT-1000				503C-D1	
C15	47			BPD-000047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C16	.5-3				829-3			CT565A		
C17	10			S10SNP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C18	6			S1SN750	TCN-6		N750K-060	NT-556	5TCUB-V5	
C19	1000			BPD-001	DD-102	TM6D1	801-001	DC-521	5HK-D1	
C20	6.8			S1S.5NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C21	800			CN-1-001	MFT-1000				503C-D1	
C22	800			CN-1-001	MFT-1000				503C-D1	
C23	120			BPD-00012	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C24	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C25	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C26	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C27	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C28	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C29	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C30	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C31	5000			BPD-005	MD-502	TM6D5	81L-005	DC-525	5HK-D5	
C32	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C33	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C34	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	Note 1
C35	5			S15	TCZ-4.7	5W5V5	GP1K-050	ZT-555	5GA-V5	
C36	.1	400		P488-1	DF-104	PTE42P1		PT601	6TM-P1	
C37	.05	400		P488-05	DF-503	PTE48S		PT405	4TM-S5	
C38	500			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C39	80									
C40	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C41	1.5			811.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C42	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C43	5000			BPD-005	MD-502	TM6D5	81L-005	DC-525	5HK-D5	
C44	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C45	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C46	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C47	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C48	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C49	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C50	.005	600		P688-005	D6- 502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C51	150			S1S0	TM5T15	GP2K-151	UC-5315	5GA-T15	
C52	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	
C53	.02	400		P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C54A	.002			P688-002		PTE6D2		PT623		
B	.005		*	P688-005	*PC-100	PTE6D5	*e1405-01	PT625	e101C1	
C	.005			P688-005		PTE6D5		PT625		
C55	5000			BPD-005	MD-502	TM5D5	81L-005	DC-525	5HK-D5	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: STRATFORD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C56	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C57	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C58	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C59	270	500								
C60	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C61	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C62	1000	500			D6-102		GP2L-102		1FM-Z1	
C63	1000	500			D6-102		GP2L-102		1FM-Z1	
C64	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C65	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C66	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C67	1000	500		1464-004		DRE5D4			MS-34	
C68	390	500		1464-0004		2RST4			MS-34	
C69	270	500								
C70	390	500		1469-0004		2RST4			MS-34	Note 2
C71	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C72	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C73	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C74	500	30000		HV30C	TV3-502	MM-C30T5	413-501	HV30035A	20DK-T5	
C75	56	2000								
C76	.01	600		689ZX-01		PJ6S1		PT611	6TM-S1	
C77	100	500		1469-0001		5RST1		MC235	MS-31	Note 1

Note 1. Not used in all Models.
Note 2. Chassis 6453, 6453C and 6753C use 3900MMF in this application.
* Items C54A, C54B, C54C, R58A, R58B, R58C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: STRATFORD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	W-3312	Q7-487 *	RTV-232	SBB-864-8	WF152	Contrast-Panel
B	500KΩ	½					UR65A	Volume-Rear
C	Switch						U8-26	Attach to R1B
R2A	2Meg	½	W-3256	Q1J-139	AG-83-8	AB-75	SU-56	Vert. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R2A
R3A	50KΩ	½	W-3257	Q1J-123	AG-44-8	AB-31	SU-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R3A
R4A	50KΩ	½	W-3257	Q1J-123	AG-44-8	AB-31	SU-35	Brightness
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R4A
R5A	3Meg	½	W-3445	Q1J-140	AG-84-8	AB-84	SU-59	Height
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R5A
R6A	2500Ω	½	W-3258	Q1J-112	AG-15-8	AB-7	SU-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R6A
R7	3500Ω	4						Focus-wire wound-see note

Note: Not used in all Models.
* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-109 & P1-120 (Panel) B13-133 & R3-119 (Rear) & SWITCH 75-1.

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: STRATFORD PART No.	IRC PART No.	NOTES
R8	15KΩ	½		BTA-150K	
R9	47KΩ	½		BTS-47K	
R10	100KΩ	½		BTS-100K	
R11	160KΩ	½		BTS-160K	
R12	1500Ω	½		BTS-1500	
R13	100KΩ	½			
R14	10KΩ	½		BTS-10K	
R15	220KΩ	½		BTS-220K	
R16	10KΩ	½		BTS-10K	
R17	15KΩ	½		BTS-15K	
R18	470Ω	½		BTS-470	
R19	470Ω	½		BTS-470	
R20	10KΩ	½			
R21	82Ω	½		BTS-82	
R22	1000Ω	½		BTS-1000	
R23	15KΩ	½			
R24	82Ω	½		BTS-82	
R25	1000Ω	½		BTS-1000	
R26	15KΩ	½			
R27	100Ω	½		BTS-100	
R28	1Meg	½		BTS-1Meg	
R29	5600Ω	½		BTS-5600	
R30	1Meg	½		BTS-1Meg	
R31	82Ω	½		BTS-82	
R32	5600Ω	2		BTS-5600	
R33	150KΩ	½		BTS-150K	
R34	220KΩ	½		BTS-220K	
R35	82Ω	½		BTS-82	
R36	1000Ω	½		BTS-1000	
R37	1000Ω	½		BTS-1000	
R38	100Ω	½		BTS-100	Note 1
R39	47KΩ	½		BTS-47K	
R40	1000Ω	½		BTS-1000	Note 1
R41	22KΩ	½		BTS-22K	
R42	6.8Meg	½		BTS-6.8Meg	
R43	220KΩ	½		BTS-220K	
R44	470KΩ	½		BTS-470K	
R45	510KΩ 5%	½			
R46	400Ω	5		1 3/4A-400	
R47	10KΩ	½		BTS-10K	
R48	56KΩ	½		BTS-56K	
R49	18KΩ	½		BTS-18K	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: STRATFORD PART No.	IRC PART No.	NOTES
R50	330KΩ	1		BTA-330K	
R51	2.2Meg	2		BTS-2.2Meg	
R52	39KΩ	2		BTS-39K	
R53	22KΩ	1		BTA-22K	
R54	2.2Meg	½		BTS-2.2Meg	
R55	2700Ω	½		BTS-2700	
R56	2700Ω	½		BTS-2700	
R57	270Ω	½		BTS-270	
R58A	22KΩ	½		BTS-22K	
B	8200Ω	½	*	BTS-8200	
C	8200Ω	½		BTS-8200	
R59	470KΩ	½		BTS-470K	
R60	8200Ω	½		BTS-8200	
R61	220KΩ	½		BTS-220K	
R62	2.2Meg	½		BTS-2.2Meg	
R63	1000Ω	½		BTS-1000	
R64	1000Ω	½		BTS-1000	Note 2
R65	1000Ω	½		BTS-1000	
R66	68000Ω	1		BTA-68000	
R67	68000Ω	½		BTS-68000	
R68	100KΩ	½		BTS-100K	
R69	100KΩ	½		BTS-100K	
R70	4.7Meg	½		BTS-4.7Meg	
R71	470KΩ	½		BTS-470K	
R72	1500Ω	½		BTS-1500	
R73	1000Ω	½		BTS-1000	
R74	120KΩ	½		BTS-120K	
R75	180KΩ	½		BTS-180	
R76	330KΩ	½		BTS-330K	Note 2
R77	10KΩ	½		BTS-10K	
R78	560KΩ	½		BTS-560K	
R79	560KΩ	½		BTS-560K	Note 2
R80	10KΩ	½			
R81	22KΩ	½		BTS-22K	
R82	680KΩ	½		BTS-680K	
R83	680KΩ	½		BTS-680K	Note 2
R84	2.2Ω	½			
R85	1Meg	1			
R86	400Ω	5		1 3/4A-400	Note 1
R87	200Ω	10		1 3/4A-200	Note 1
R88	300Ω	10		1 3/4A-300	Note 1
R89	22KΩ	½		BTS-22K	

Note 1. Not used in all Models.
Note 2. Use only in Ch. 6753C, 6453 and 6453C.
* Items R58A, R58B, R58C, C54A, C54B, C54C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: STRATFORD PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA TYPE No.
T1	117VAC @1.5A	674VCT .160ADC	5VAC @3A	6.3VAC @1.2A SEC. 4 6.3VAC @7.4A		P-8165 ① ②	PL-1070	TP-370 ①	R-42BC	

① Drill new mounting holes.
② Do not use low taps on HV windings.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	SEC.	REPLACEMENT DATA: STRATFORD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	170Ω	920Ω		A-8126	A-3003	TBC-8	A-97X	208T2 ⑤	Vert.Osc. Trans. Horiz. Output Trans.
T3	386Ω tap @6.7Ω, 23.7Ω, 26Ω, 46Ω	3.9Ω SEC. 2 0Ω							
T4	1250Ω tap ④ 10.5Ω			A-8123	A-3037	TBC-8 ①	A-102X	222T1	Vert. Output Trans.
T5A	30Ω			DY-11 ② ③	MDF-73 ② ③	TT-7 ② ③	Y-18 ② ③		Horiz.Deflection Coils
B	50Ω								Vert.Deflection Coils
T6	65Ω			WC-5 ④		TL-4			Width Coil

① Connect as auto trans.
② Use original deflection coil network
③ Use original yoke cover and positioning device
④ Connect colored red and blue terminals.
⑤ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	SEC.	DC RES. PRI.	SEC.	REPLACEMENT DATA: STRATFORD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T7	6.6KΩ	3.1Ω	264Ω	.41Ω		A-3877	A-2930	RO-301	S-3X	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: STRATFORD PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3.1Ω		S7-105 Mod.P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	SEC.	REPLACEMENT DATA: STRATFORD PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	Fil.Choke	0Ω						
L3	Neutr.Coil	0Ω						
L4	RF, Mixer Grid & Osc. Coils	0Ω						
L5	Fil.Choke	0Ω						
L6	RF Choke	0Ω						
L7	1st.Video IF	1Ω						
L8	RF Choke	1.3Ω						
L9	2nd.Video IF	.3Ω	.2Ω		17-1063		6250	
L10	3rd.Video IF	.2Ω	.3Ω		17-1063		6249	
L11	4th.Video IF	.3Ω	.2Ω		17-1063		6349	
L12	Series Peaking Coil	4.4Ω			19-4121	TV-181 *	4642 *	102 Microhenries, wound on 10KΩ resistor
L13	Shunt Peaking Coil	1Ω			19-3680		4650	670 Microhenries
L14	4.5MC Trap	.4Ω			20-1004	TV-151	1470	
L15	Series Peaking Coil	4.4Ω			19-4121	TV-181 *	4642 *	102 Microhenries, wound on 10KΩ resistor
L16	Shunt Peaking Coil	12Ω			19-3680		4650	670 Microhenries
L17	Series Peaking Coil	4.4Ω			19-4121	TV-181 *	4642 *	102 Microhenries, wound on 10KΩ resistor
L18	Sound IF	7Ω			17-3402			Tapped @ 3.4Ω
L19	Ratio Det.	3.3Ω	.2ΩCT		17-3497 †	TV-115 †	6205 †	Tertiary winding - .8Ω
L20	Horiz.Osc.	48Ω			19-1570	TV-163	6210	

* Parallel with 10KΩ resistor
† Use adaptor plate

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: STRATFORD PART No.	STANCOR PART No.	MERIT PART No	CHICAGO PART No	TRIAD PART No
L21	.160ADC	65Ω	1.95 Hy.		C-2325 ①	C-2991 ①	TR-1733 ①	C-21X ①

① Drill new mounting hole.

STRATFORD MODELS 916, 917, 920, 921, 924, 927, 1016, 1017, 1020, 1024, 1027 (Ch. E6353, C, 6353, C, E6453, C, 6453, C, 6753C)

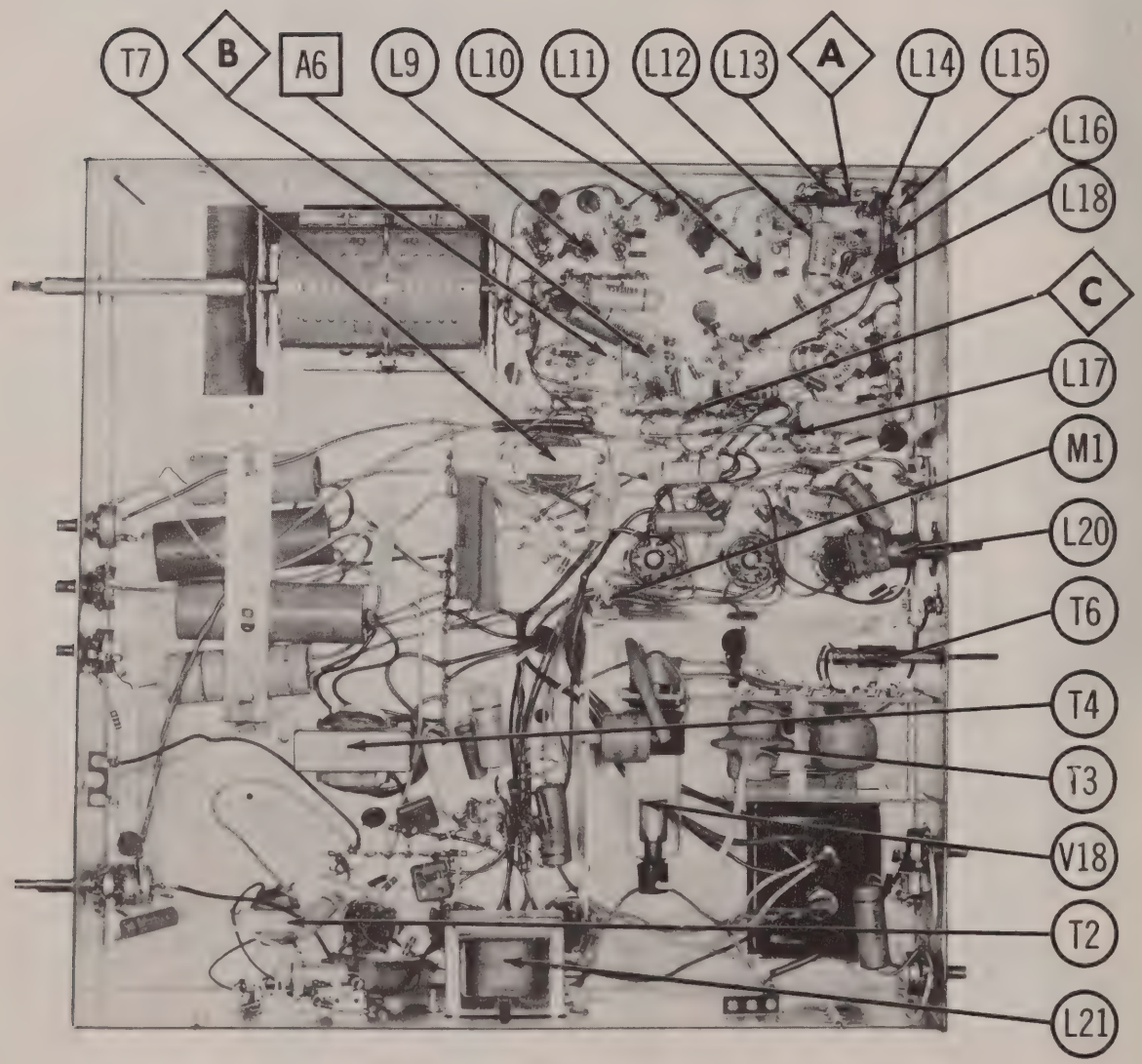
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			STRATFORD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A. 250V.			312.250	357001	AGC 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	STRATFORD PART No.	NOTES
M2	RF Tuner	TV-2231	
M3	Ion Trap		
B2	Trimmer Cap.		Horiz. Drive 40-400MMF



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

TROUBLE SHOOTING AIDS (cont)

AUDIO

WEAK OR NO SOUND

Check by substitution V8, V9 and V10. Check stages of V9B and V10 using audio signal generator. Apply audio signal across R42.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V9B and V10 especially C49 and T7.

BUZZ

Adjust ratio detector secondary (A7) for minimum buzz. If buzz is still objectionable substitute V9 and realign ratio detector (A6 and A7). Check associated circuit components.

DISTORTED

Check by substitution V8, V9 and V10. Check stages of V9B and V10 using audio signal generator and scope. Apply audio signal across R42. Connect scope across secondary of T7.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components of the stage where distortion occurs.

POWER

DEAD SET

Check AC interlock assembly. Check switch on volume control. Check T1.

SMALL AND/ OR DIM RASTER

'Substitute V19. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V15, V16, V17 and V18. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check R84, R85, C74, T3, T5A, C71 and other associated components.	Check C68, C69, C70 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V15, V16, V17, V18 and V19. Proceed as outlined under "Loss of High Voltage". Check picture tube.

BLOOMING

Check V15, V16, V17, V18 and V19. Check R84, R85, C74, T3, T5A and other associated circuit components. Check picture tube.

GENERAL

RASTER SOUND NO PICTURE

Substitute V7. Check associated circuit components. Check picture tube.

RASTER NO SOUND NO PIX

Check V1, V2, V3, V4, V5, V6 and V10. Check associated circuit components.

NO RASTER NO SOUND NO PIX

Follow procedure outlined under "Dead Set". Check B+ network.

TOTAL LOSS OF SYNC

Check by substitution V11 and V12. Check associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

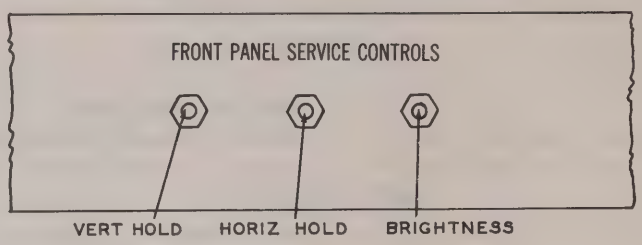
PICTURE TUBE SAFETY GLASS CLEANING

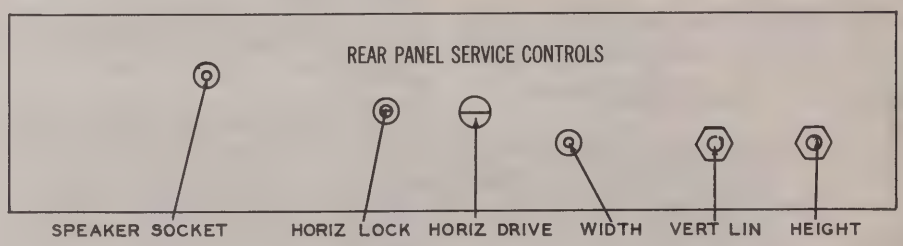
To clean safety glass remove 3 wood screws holding wood strip at top of cabinet. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator Circuit can be made from the rear panel of the chassis set the Horiz. Hold Control at the mid-position of its range and adjust the Horiz. Lock slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, Adjust the Ratio Detector Secondary L19, located on top of chassis. (See tube placement chart).

FUSES

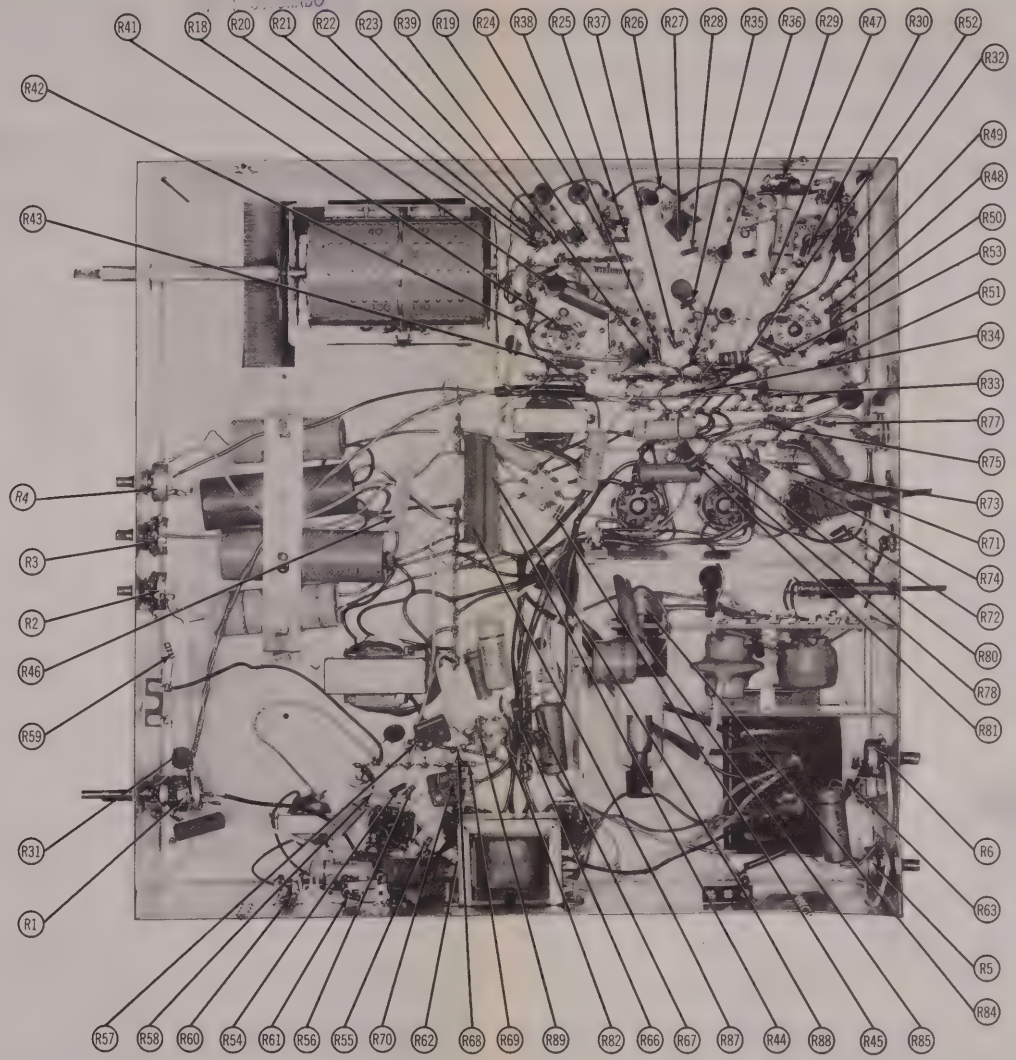
One fuse is used for Horiz. Sweep Circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

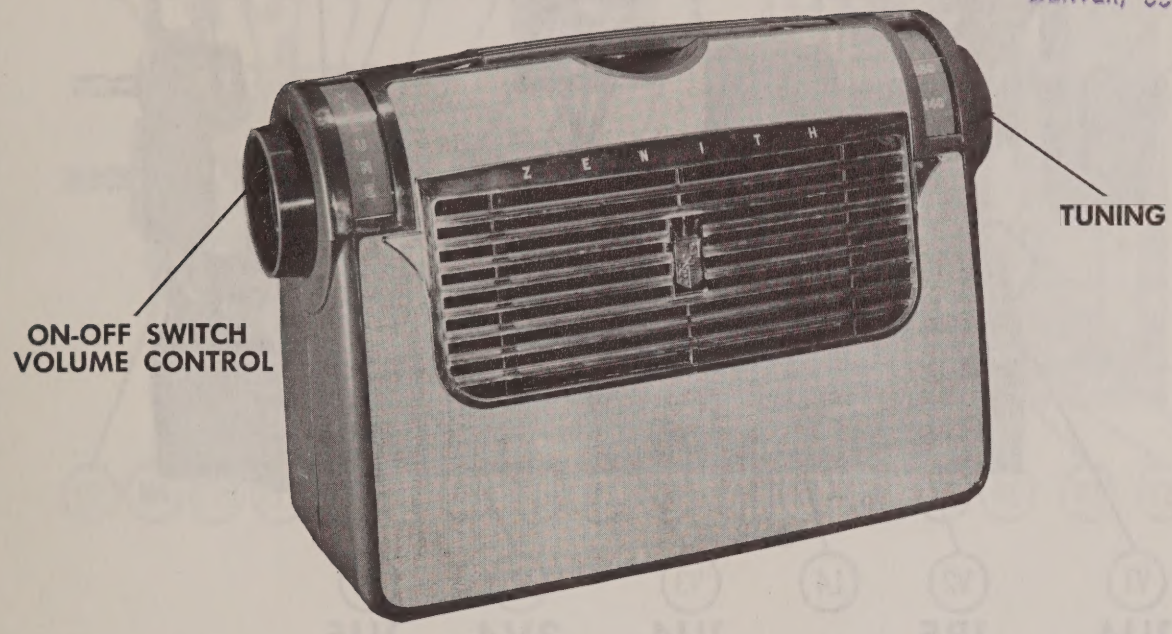
1. Remove 4 push on type control knobs from front panel.
2. Remove 2 screws. Remove antenna bracket from rear cover.
3. Remove 4 wood screws. Remove rear cover.
4. Disconnect speaker. Remove 2 wood screws. Remove speaker.
5. Remove 4 chassis bolts. Remove chassis.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

L. F. [illegible] SCHOOL OF
L. F. [illegible] APPRENTICESHIP
3934 [illegible] ST.
DENVER, COLORADO

ZENITH
MODELS J504, Y (Ch. 5J41)



ZENITH
MODELS J504, Y (Ch. 5J41)

TRADE NAME Zenith Models J504, Y (Ch. 5J41)
MANUFACTURER Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET Three Power Portable AM Superheterodyne Receiver
TUBES (Five) Types 1U4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output

POWER SUPPLY 110-120 Volts, AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply
RATING 150MA @ 117 Volts AC (or) 64MA @ 9 Volts DC & 16MA @ 90 Volts DC
TUNING RANGE—BROADCAST 535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6, A7	"

Replace receiver in case, tune in weak station near 1400KC and repeak A7 for maximum volume.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det. -AVC-AF Amp	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲60	150	22-2410	AFH4-23		DO30		FP408	R1079	
B	▲20	150								
C	■40	150								
D	200	10								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	200		22-1668	SI200	D6-201	TM5T2	GP2K-201	UC-532	5GA-T2	
C4	.02	200	22-1386	P488-02	DD-203	PJ2S2		PT412	2TM-S2	
C5	.005	200	22-319	484-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C6	.1	200	22-827	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C7	10000		22-3	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C8	110		22-1669	SI110	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C9	.02	200	22-1386	P488-02	DD-203	PJ2S2		PT412	2TM-S2	
C10	200		22-1668	SI200	D6-201	TM5T2	GP2K-201	UC-532	2TM-S2	
C11	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C12	10000		22-3	BPD-01	DD-1032	TM5S1	811-01	DC-511	5HK-S1	
C13	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	63-2371	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWB-2	Not Req.	US-27	Attach to R1A

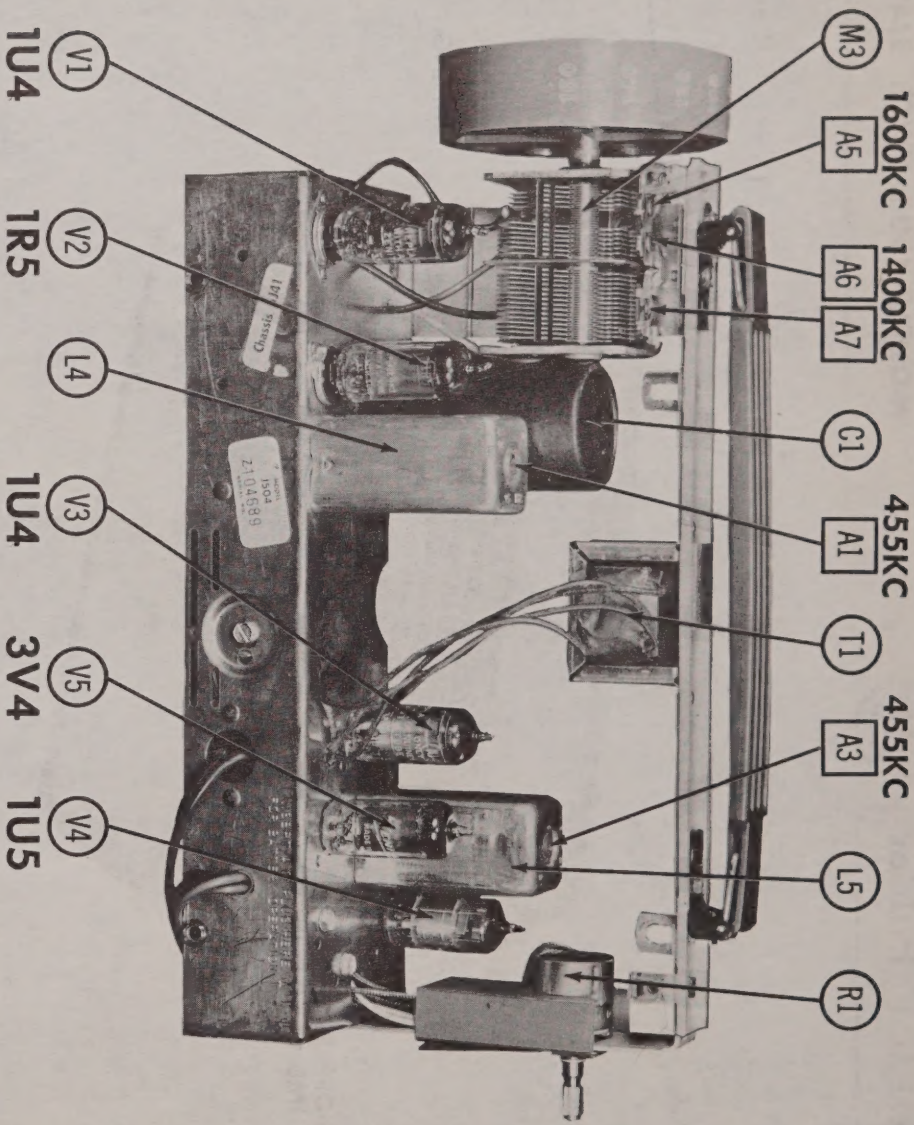
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	18KΩ	½	63-1838	BTS-18K	
R3	1Meg	½	63-1912	BTS-1Meg	
R4	220Ω	½	63-1757	BTS-220	Note 1
R5	100KΩ	½	63-1870	BTS-100K	
R6	1000Ω	½	63-1786		
R7	6.8Meg	½	63-1947	BTS-6.8Meg	
R8	1000Ω	½	63-1786	BTS-1000	
R9	3.3Meg	½	63-1933	BTS-3.3Meg	
R10	8.2Meg	½	63-1950	BTS-8.2Meg	
R11	1000Ω	½	63-1786	BTS-1000	Note 2
R12	1000Ω	½	63-1786	BTS-1000	Note 1

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R13	4.7Meg	½	63-1940	BTS-4.7Meg	
R14	4.7Meg	½	63-1940	BTS-4.7Meg	
R15	1Meg	½	63-1912	BTS-1Meg	
R16	3.3Meg	½	63-1933	BTS-3.3Meg	
R17	680Ω	½	63-1778	BTS-680	
R18	130Ω	3	63-2018		
R19	22KΩ	½	63-1842	BTS-22K	
R20A	720Ω	10	63-2010		
B	1350Ω				
R21	100Ω	½	63-1744	BTS-100	

Note 1. Some Models may use a 680Ω resistor in this application.
Note 2. Some Models may use a 220Ω resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	9.6KΩ	3.2Ω	800Ω	.5Ω Sec. 2 1.5Ω	95-1303					

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.2Ω	49-717	ST-803 Mod. P525-V	52A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	1.2Ω		S-18825				
L2	RF Coil	6.5Ω	6Ω	S-15811				Sec. tapped @ 4Ω
L3	Osc. Coil	2Ω	9Ω	S-18827				
L4	Input IF	23Ω	22Ω	95-1132	16-6666*	BC-368 *	1312-C1*	
L5	Output IF	22Ω	22Ω	95-1133		BC-355 †	12-C6 †	

* Drill mounting holes.
† Drill mounting holes and use adaptor plate

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	ZENITH PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.062ADC	212-5	NB5	5M4	1003A	6S75	75

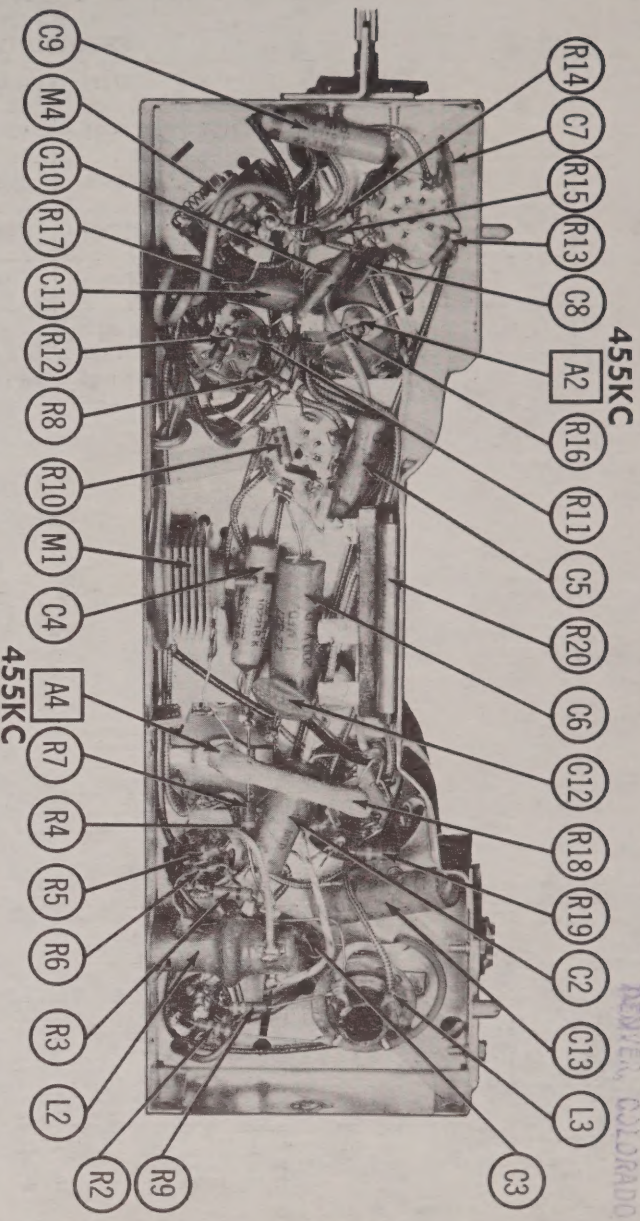
BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	9V (A) 90V (B)	Z909			757			F6A60P	

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Tuning Cap.	22-2402	38-487MMF, 15-205MMF, 11-82MMF
M4	Switch	85-520	Power change-over
	Cabinet Front	14-1424	Model J504Y
	Cabinet Front	14-1439	Model J504
	Cabinet Back	14-1422	Model J504Y
	Cabinet Back	14-1440	Model J504
	Handle	36-52	Model J504Y
	Handle	36-54	Model J504
	Dial Scale	26-472	Ebony Model
	Dial Scale	26-474	Adobe Model
	Escutcheon Plate	57-1822	Volume, Model J504Y
	Escutcheon Plate	57-1838	Volume, Model J504
	Escutcheon Plate	57-1823	Dial, Models J504Y and J504
	Escutcheon Plate	57-1824	Models J504Y, J504
	Knob	46-977	Volume & Tuning (2 used) Model J504Y
	Knob	46-1007	Volume & Tuning (2 used) Model J504
	Escutcheon	57-1826	

CHASSIS—BOTTOM VIEW



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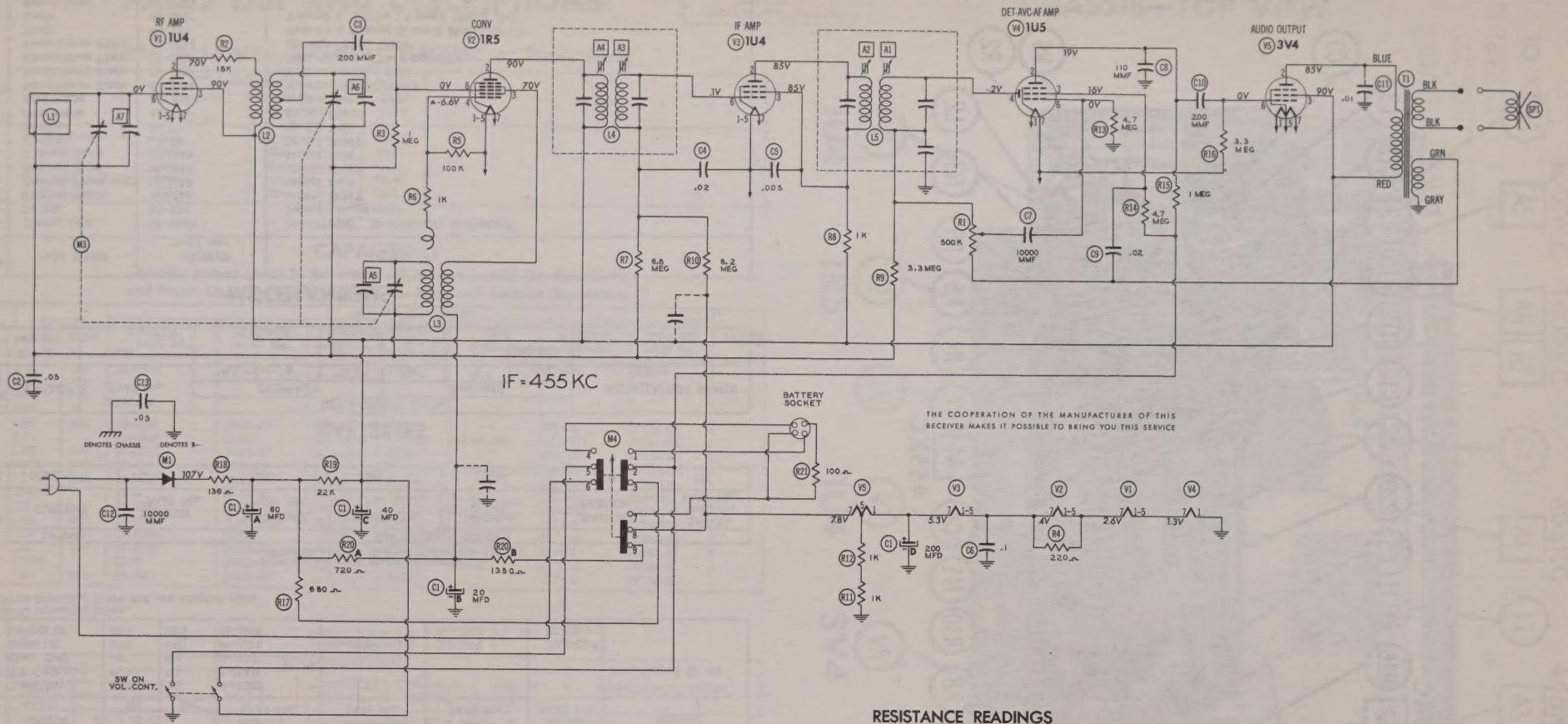
ZENITH MODEL J504 (Ch. 5T4)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†18.8KΩ	†810Ω	3Meg	*	3Meg	*
V 2	1R5	*	†810Ω	†850Ω	100KΩ	*	4Meg	*
V 3	1U4	*	†1.8KΩ	†1.8KΩ	4.6Meg	*	4.6Meg	*
V 4	1U5	*	†1Meg	†4.7Meg	500KΩ	50Ω	4.7Meg	*
V 5	3V4	*	†1.1KΩ	†810Ω	†130Ω	*	3.2Meg	*

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.